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United States
Department of
Agriculture

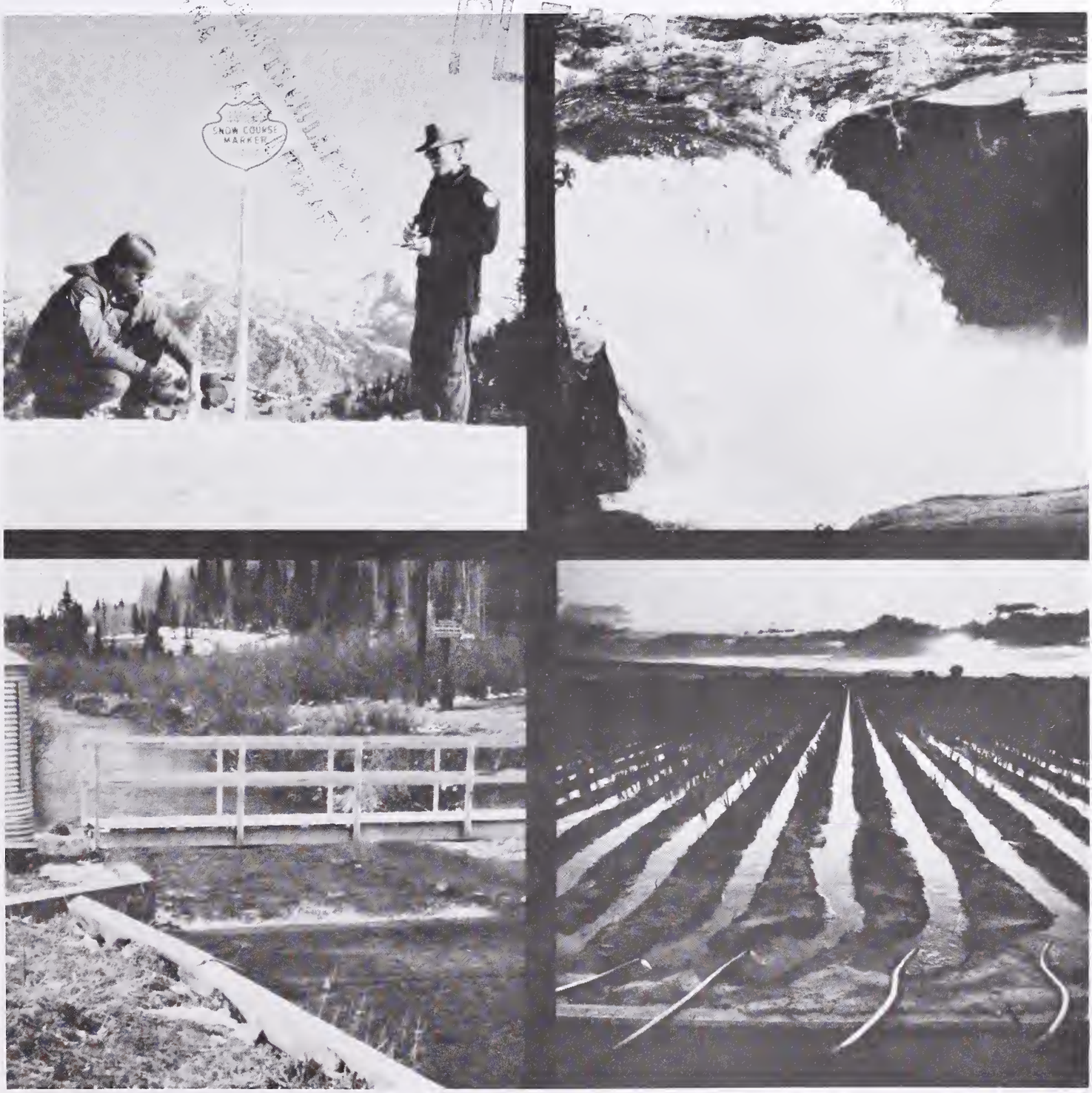
**Soil
Conservation
Service**

**Bozeman,
Montana**

Montana
Water Supply Outlook

March 1, 1988

1515 E. 6th Ave.
HELENA, MONTANA



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Foreword

How Forecasts Are Made

Most of the annual streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts are issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecasts are terms reasonable minimum, most probable, and reasonable maximum. Actual streamflow can be expected to fall between the lower and upper forecast values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historical snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 East 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Colorado	2490 West 26th Ave., Denver, CO 80211
New Mexico	517 Gold Ave. S.W., Room 3301, Albuquerque, NM 87102-3157
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	1201 Terminal Way, Room 219, Reno, NV 89502
Oregon	1220 Southwest 3rd Ave., Room 1640, Portland, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201-1080
Wyoming	Federal Building, 100 East "B" Street, Casper, WY 82601

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service and National Weather Service monthly, January through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadway, Room 248, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resouces, P.O. Box 388, Sacramento, CA 95802; British Columbia — The Ministry of Environment, Water Investigations Branch, Parliament Buildings, Victoria, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Environment Technical Services Division, 9820 106th St., Edmonton, Alberta T5K 2J6.

Montana
Water Supply Outlook

and

Federal – State – Private
Cooperative Snow Surveys

Issued by

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Programs and assistance of the United States Department of Agriculture are available without regard to race, creed, color, sex, age, or national origin.

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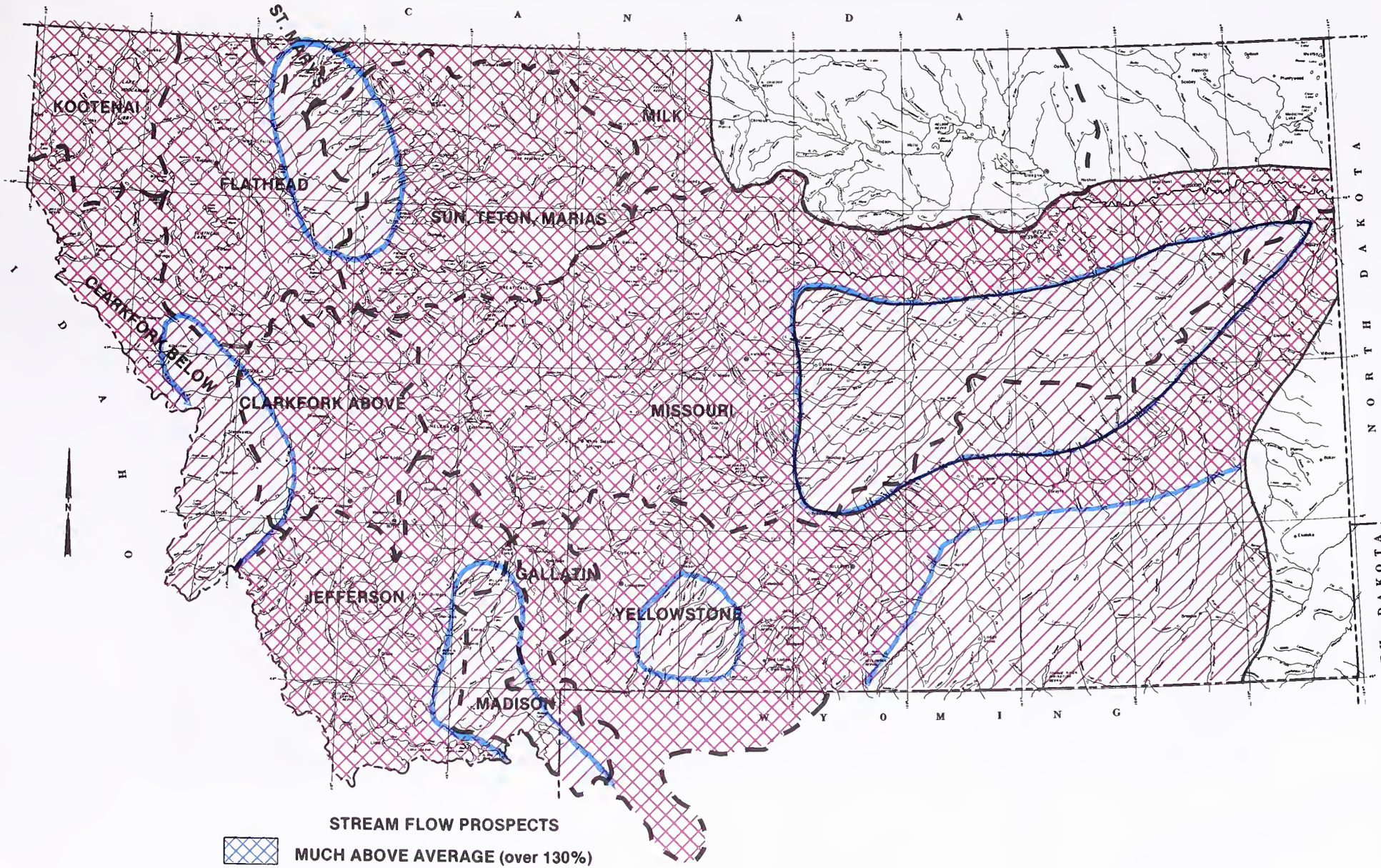
SOIL CONSERVATION SERVICE



STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

April-September Forecasts

March 1,1988

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296

USDA SCS-FORT WORTH TEXAS 1985

General Outlook

Summary

Most basins had below average mountain precipitation in February. Snowpacks remain below average in all areas of Montana with most drainages reporting about 70 percent of average. The range of snowpacks across the state vary from 55 to 80 percent of average. Soils under the snow are drier than normal. Spring and summer streamflows are forecast near or a little below those issued last month and remain well below average. Most reservoirs west of the Divide have below average storage. Others in the Missouri River Drainage generally have storage near or above average. Some, however, have below average storage.

Snowpack

Snow water content percentages are up 5 to 10 percent over those reported a month ago. Smallest increases occurred in the northern drainages. The best area in the State is the Bitterroot River Drainage where snowpack is about 80 percent of average. The Kootenai, North Fork and Middle Fork of the Flathead River, Stillwater, Whitefish, St. Mary and Milk River headwaters and a small area near Red Lodge have the lowest snowpack at 55 to 60 percent of average. Most other areas have about 70 percent of average amounts of water stored in the snow. Valley and foothill snowcover started to disappear with warm weather near the end of February. In general, low elevation snowpacks report higher percentages than at higher elevations. By March 1, about 85 percent of the season's snowpack has accumulated.

Precipitation

Mountain precipitation for the first half of February was above average but tapered off near the end of the month. The Clark Fork River Drainage west of the Divide, the Yellowstone and Main Stem of the Missouri all reported near or above average mountain precipitation for February. The Kootenai River Drainage reported the lowest amount with about 60 percent of average. Other drainages reported 70 to 90 percent of average amounts.

Reservoirs

West of Divide, most major reservoirs and some smaller irrigation reservoirs have below average storage. Some of these may not fill this year unless there is a significant improvement in the moisture pattern. East of the Divide, most reservoirs have near or above average storage with the exceptions of Lima, Canyon Ferry, Tongue River and Mystic Lake.

Streamflow

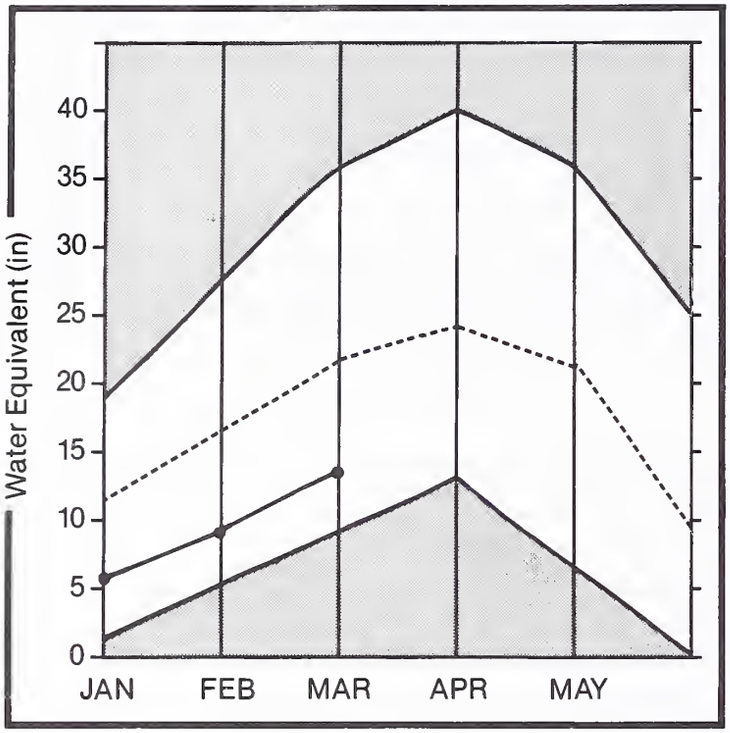
Spring and summer streamflows are forecast to be below to well below average even with average spring moisture. If spring precipitation is below average, streamflows could approach record low levels. In general, streamflows in the southern part of Montana are better than those near the Canadian border. Mid and late season irrigation water supplies will be short in many areas.

Soil Moisture

Soils under the snowpack remain drier than usual. Some lower elevations had melt near the end of February with nearly all the meltwater being absorbed by the soil.

Kootenai Basin

Mountain snowpack* (inches)



*Kootenai in Montana

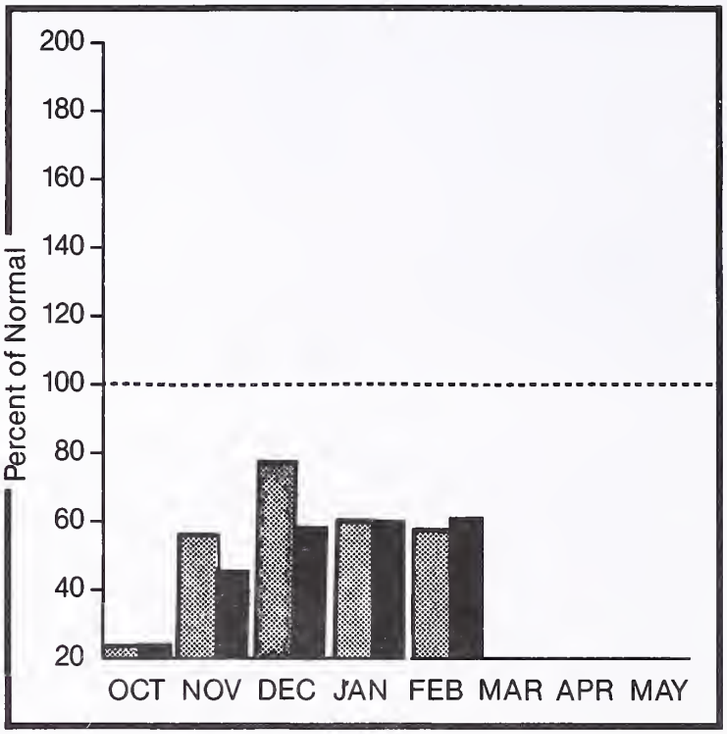
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Snowpacks improved slightly during February but still remain quite low. Current snowpack is about 60 percent of average. Mountain precipitation was only about 60 percent of average for the month. This is the sixth consecutive month of below average precipitation. Soils under the snow are drier than usual. Spring and summer streamflows are forecast to be well below average even with near average amounts of spring precipitation. If moisture patterns continue to be below average, streamflows could be near record low levels this season.

For more information contact your local Soil Conservation Service office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
KOOTENAI RIVER blw Libby Dam 2	APR-JUL	5885.0	3900.0	66	5080.0	86	2720.0	46
	APR-SEP	6903.0	4580.0	66	5960.0	86	3200.0	46
FISHER RIVER near Libby	APR-JUL	240.0	150.0	63	210.0	88	88.0	37
	APR-SEP	256.0	160.0	63	225.0	88	90.0	35
YAAK RIVER near Troy	APR-JUL	494.0	285.0	58	415.0	84	160.0	32
	APR-SEP	517.0	315.0	61	450.0	87	180.0	35
KOOTENAI RIVER at Leonia 2	APR-JUL	7340.0	4840.0	66	6310.0	86	3370.0	46
	APR-SEP	8441.0	5570.0	66	7260.0	86	3880.0	46

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE KOOCANUSA	5748.0	1393.0	2205.0	1998.0

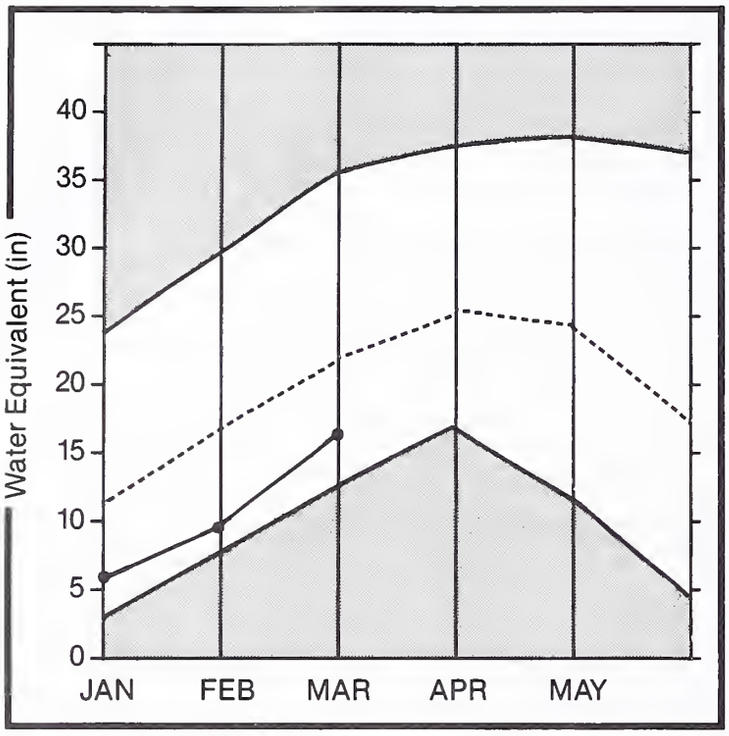
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
EAST KOOTENAI in B.C.	25	83	68
KOOTENAI in MONTANA	30	81	59
KOOTENAI ab BONNERS FERRY	54	82	63

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Flathead Basin

Mountain snowpack* (inches)



*Flathead

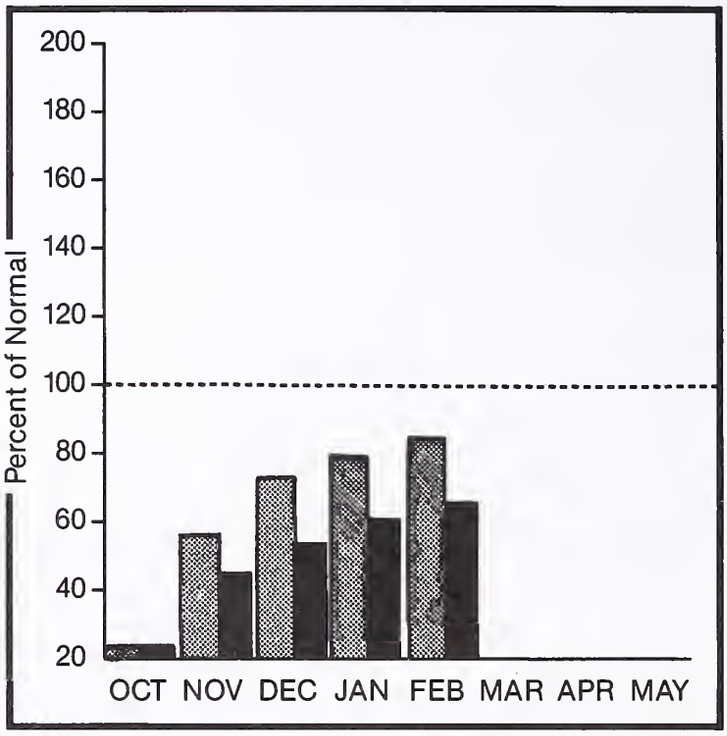
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

This is the sixth consecutive month with below average amounts. The snowpack improved a little during the past month but remains below average. The Swan and South Fork Flathead Rivers have the best snow at 70 percent of average. Other drainages are somewhat lower at 57 to 65 percent of average. Soils under the snow are still dry. Spring and summer streamflows are forecast to be well below average even if spring precipitation is near average. If precipitation patterns continue below average, some streams could approach record low volumes for the season. This could create problems with refilling some reservoirs.

For more information contact your local Soil Conservation Service office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
NF FLATHEAD near Columbia Falls	APR-JUL	1701.0	1140.0	67	1410.0	83	870.0	51
	APR-SEP	1880.0	1260.0	67	1560.0	83	960.0	51
MF FLATHEAD near West Glacier	APR-JUL	1680.0	1170.0	70	1440.0	86	900.0	54
	APR-SEP	1836.0	1300.0	71	1600.0	87	1000.0	54
SF FLATHEAD near Columbia Falls 1	APR-JUL	2110.0	1480.0	70	2000.0	95	975.0	46
	APR-SEP	2248.0	1580.0	70	2230.0	99	930.0	41
FLATHEAD at Columbia Falls 1	ARP-JUL	5621.0	3800.0	68	4980.0	89	2620.0	47
	APR-SEP	6114.0	4170.0	68	5450.0	89	2890.0	47
SWAN RIVER near Big Fork	APR-JUL	597.0	400.0	67	495.0	83	305.0	51
	APR-SEP	683.0	455.0	67	565.0	83	345.0	51
FLATHEAD RIVER near Polson 2	APR-JUL	6586.0	4570.0	69	5620.0	85	3520.0	53
	APR-SEP	7150.0	4960.0	69	6100.0	85	3820.0	53

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CAMAS (4)	45.2	14.9	22.2	21.7
MISSION VALLEY (8)	100.0	28.2	31.5	38.4
HUNGRY HORSE	3451.0	1400.0	2295.0	2257.0
FLATHEAD LAKE	1791.0	889.0	635.1	901.0

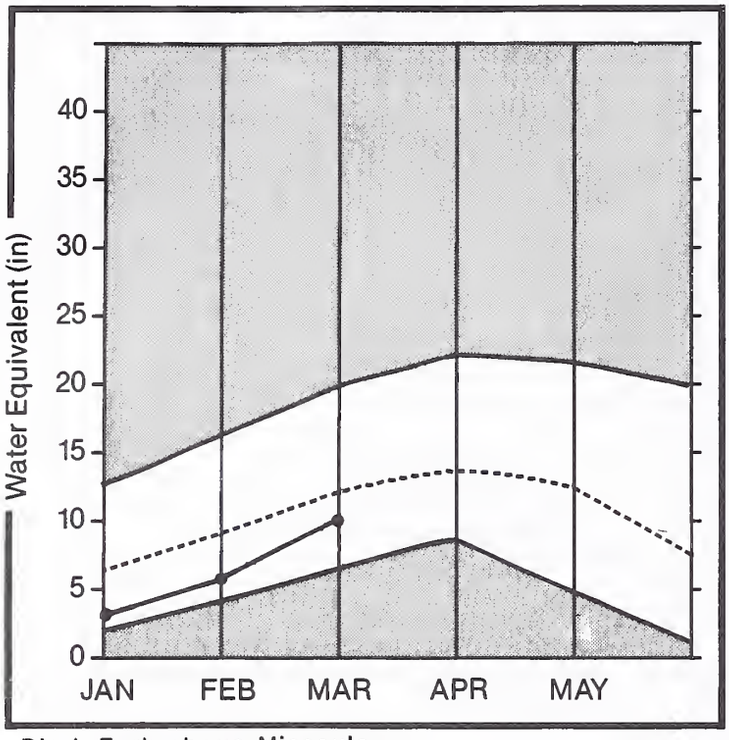
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
NORTH FORK FLATHEAD	15	74	60
MIDDLE FORK FLATHEAD	11	83	65
SOUTH FORK FLATHEAD	13	102	70
STILLWATER-WHITEFISH	9	86	60
SWAN	12	103	70
LITTLE BITTERROOT	8	98	59
FLATHEAD	48	88	65

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin above Missoula

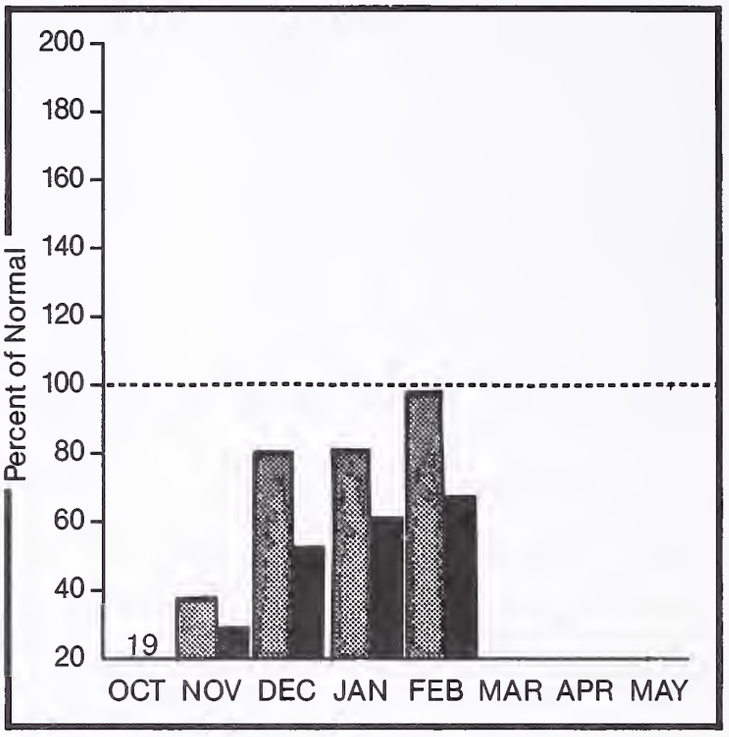
Mountain snowpack* (inches)



*Clark Fork above Missoula

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

Water Supply Outlook

February mountain precipitation was near average. This provided some improvement in snowpack conditions. However, the amount of water stored in the snow is still below average. Most areas now have about 75 percent of average snowpack. Soils under the snow are drier than normal. Spring and summer streamflows are forecast to be well below average assuming near average precipitation in the coming months. If moisture patterns are below average, streamflows could be quite low during the irrigation season.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MOULTON RESERVOIR Inflow (MG)2	APR-JUN	237.0	150.0	63	210.0	89	88.0	37
	APR-JUL	263.0	163.0	62	230.0	87	95.0	36
WARM SPRINGS CR at Meyers Dam 2	APR-JUL	39.0	26.0	67	36.0	92	16.0	41
	APR-SEP	49.0	32.0	65	45.0	92	19.0	39
FLINT CREEK near Southern Cross 2	APR-JUL	14.8	9.6	65	15.0	101	4.0	27
	APR-SEP	17.8	11.0	62	17.0	96	5.0	28
FLINT CREEK below Boulder Creek 2	APR-JUL	61.0	41.0	67	63.0	103	19.0	31
	APR-SEP	78.0	54.0	69	82.0	105	26.0	33
LOWER WILLOW CR RES Inflow 2	APR-JUL	14.9	9.4	63	15.0	101	4.0	27
	APR-SEP	15.8	10.1	64	16.0	101	4.0	25
M. FK. ROCK CRK near Philipsburg	APR-JUL	69.0	49.0	71	67.0	97	31.0	45
	APR-SEP	77.0	55.0	71	75.0	97	35.0	45
NEVADA CREEK near Finn	APR-JUL	21.0	13.5	64	21.0	100	6.0	29
	APR-SEP	22.0	14.5	66	22.0	100	7.0	32
BLACKFOOT RIVER near Bonner	APR-JUL	874.0	575.0	66	715.0	82	435.0	50
	APR-SEP	969.0	665.0	69	820.0	85	510.0	53
CLARK FORK RIVER above Milltown 2	APR-JUL	703.0	480.0	68	705.0	100	255.0	36
	APR-SEP	812.0	550.0	68	810.0	100	290.0	36
CLARK FORK RIVER above Missoula	APR-JUL	1577.0	1060.0	67	1470.0	93	650.0	41
	APR-SEP	1781.0	1220.0	69	1680.0	94	760.0	43

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GEORGETOWN LAKE	31.0	26.5	29.1	25.7
LOWER WILLOW CREEK	4.9	1.4	1.3	1.7
NEVADA CREEK	12.6	0.8	2.3	5.2

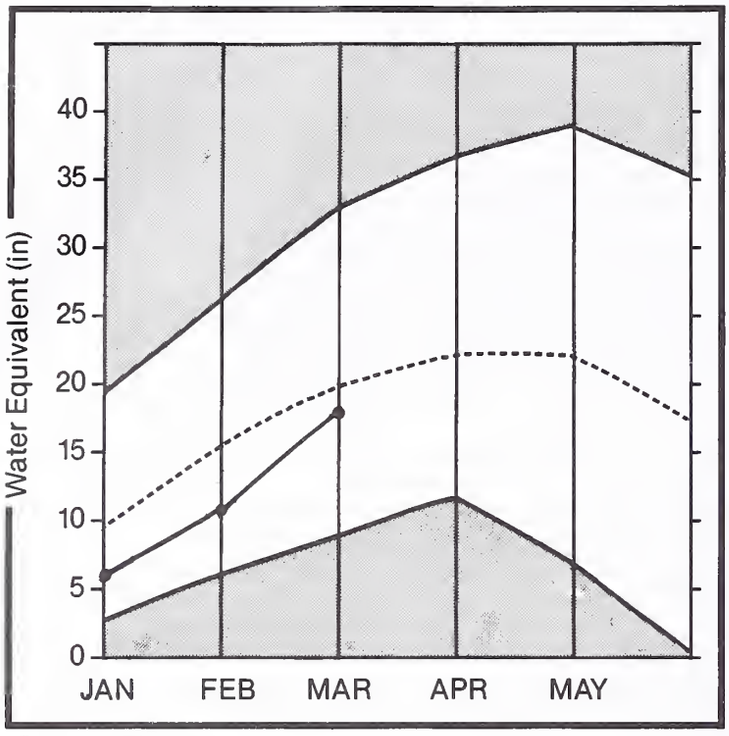
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	44	117	73
BLACKFOOT	22	122	75
CLARK FORK above MISSOULA	60	117	73

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Clark Fork Basin below Missoula

Mountain snowpack* (inches)



*Bitterroot

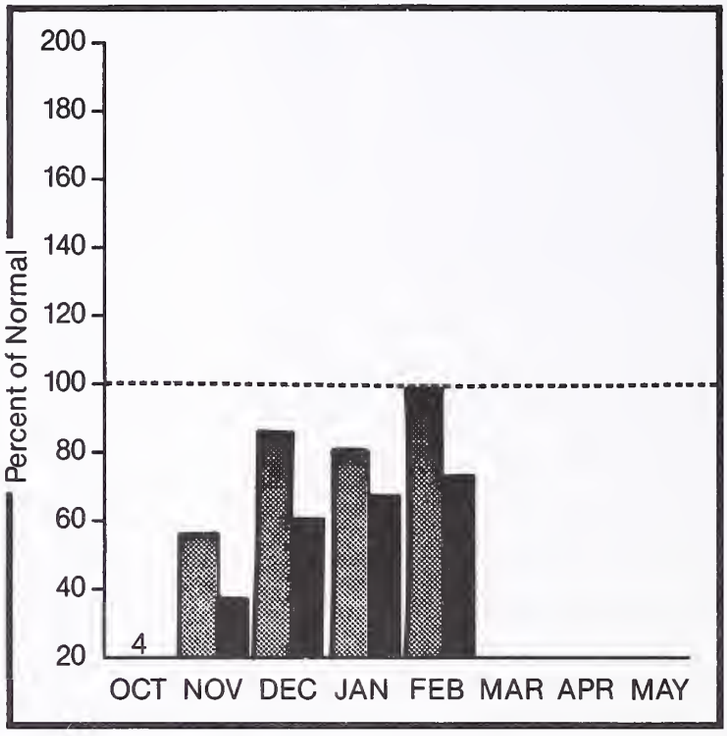
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was about average in February. Snowpacks have improved during the month and are now about 80 percent of average in the Bitterroot Drainage. Drainages, flowing into the Clark Fork River downstream from the Bitterroot, reported 65 percent of average. Soils under the snowpack are still dry. Forecasts of spring and summer streamflows are for below average runoff assuming near average precipitation over the next few months. Some shortages of irrigation water will occur if precipitation is average or below average this spring and summer.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN below Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
CLARK FORK RIVER above Missoula	APR-JUL	1577.0	1060.0	67	1470.0	93	650.0	41
	APR-SEP	1781.0	1220.0	69	1680.0	94	760.0	43
W.F. BITTERROOT RIVER nr Conner 2	APR-JUL	147.0	110.0	75	148.0	101	72.0	49
	APR-SEP	169.0	130.0	77	174.0	103	86.0	51
BITTERROOT RIVER near Darby	APR-JUL	524.0	380.0	73	515.0	98	245.0	47
	APR-SEP	573.0	425.0	74	575.0	100	275.0	48
SKALKAHO CREEK near Hamilton	APR-JUL	46.0	33.0	72	40.0	87	26.0	57
	APR-SEP	54.0	39.0	72	48.0	89	30.0	56
BURNT FORK CR nr Stevensville 2	APR-JUL	32.0	22.0	69	30.0	94	14.0	44
	APR-SEP	38.0	27.0	71	37.0	97	17.0	45
BITTERROOT RIVER at Missoula 2	APR-JUL	1371.0	1025.0	75	1380.0	101	670.0	49
	APR-SEP	1497.0	1120.0	75	1510.0	101	730.0	49
CLARK FORK RIVER below Missoula	APR-JUL	2948.0	2080.0	71	2600.0	88	1550.0	53
	APR-SEP	3276.0	2350.0	72	2940.0	90	1760.0	54
CLARK FORK RIVER at St. Regis	APR-JUL	3894.0	2790.0	72	4000.0	103	1580.0	41
	APR-SEP	4325.0	3090.0	71	4430.0	102	1750.0	40
CLARK FORK RIVER near Plains 2	APR-JUL	10850.0	7480.0	69	9870.0	91	5100.0	47
	APR-SEP	11930.0	8230.0	69	10900.0	91	5600.0	47
THOMPSON RIVER near Thompson Falls	APR-JUL	222.0	110.0	50	163.0	73	57.0	26
	APR-SEP	250.0	134.0	54	194.0	78	74.0	30
PROSPECT CREEK at Thompson Falls	APR-JUL	128.0	80.0	63	113.0	88	47.0	37
	APR-SEP	137.0	89.0	65	125.0	91	53.0	39
CLARK FORK at Whitehorse Rapids 2	APR-JUL	12150.0	8260.0	68	11000.0	91	5470.0	45
	APR-SEP	13370.0	9090.0	68	12200.0	91	6000.0	45

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
PAINTED ROCKS LAKE	31.7	0.0	0.0	14.7
NOXON RAPIDS	335.0	321.6	291.7	297.6
COMO	34.9	5.7	9.0	13.4

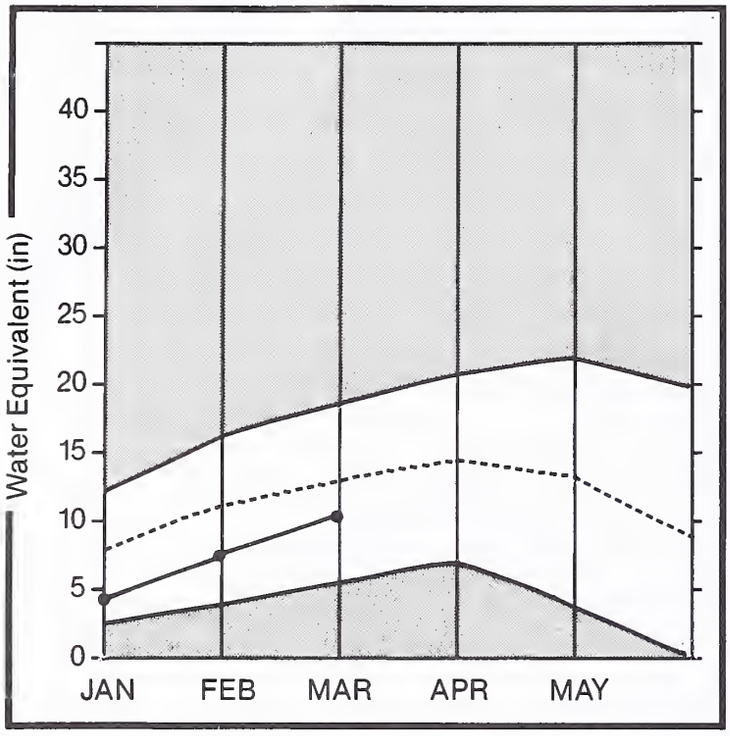
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK above MISSOULA	60	117	73
BITTERROOT	24	125	80
LWR CLARK FK blw MISSOULA	22	99	66
BITTERROOT & LWR C.F.	44	110	73
CLARK FORK TOTAL	99	112	73
FLATHEAD	47	88	65
PEND O'REILLE	140	102	69

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Jefferson Basin

Mountain snowpack* (inches)



*Jefferson

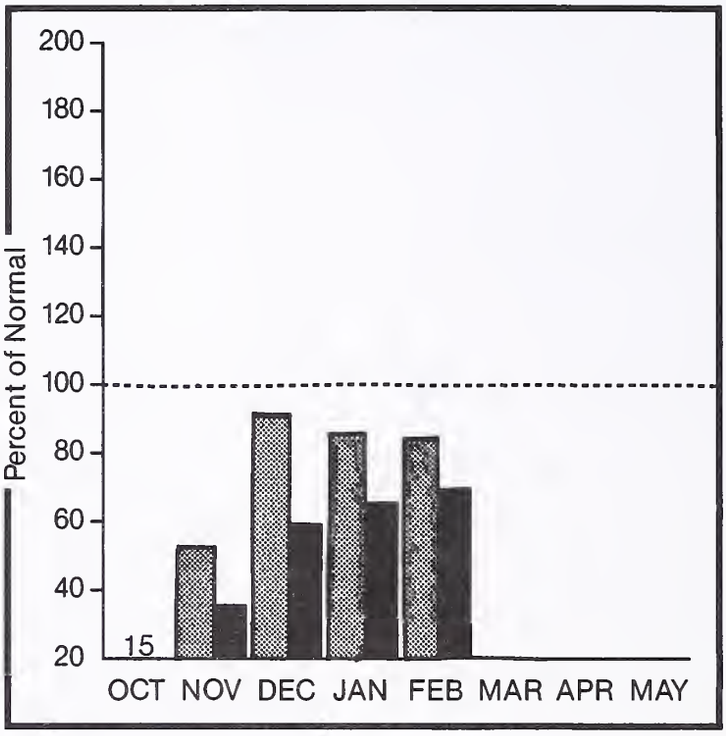
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Some improvement in the snowpack occurred in February. Snowpacks are now about 85 percent of average in all drainages. Mountain precipitation was about 85 percent of average. Precipitation has been below average for the past six months. Soils under the snow are still dry. Streamflows are expected to be below average in all drainages. Some shortages in irrigation water supplies are anticipated.

For more information contact your local Soil Conservation Service office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
RED ROCK RIVER near Monida 2	APR-JUL	105.0	66.0	63	102.0	97	30.0	29
	APR-SEP	114.0	70.0	61	109.0	96	31.0	27
BEAVERHEAD RIVER near Grant 2	APR-JUL	149.0	75.0	50	125.0	84	24.0	16
	APR-SEP	174.0	82.0	47	140.0	80	23.0	13
BEAVERHEAD RIVER at Barratts 2	APR-JUL	192.0	110.0	57	175.0	91	45.0	23
	APR-SEP	224.0	130.0	58	205.0	92	54.0	24
RUBY RIVER near Alder	APR-JUL	89.0	62.0	70	90.0	101	34.0	38
	APR-SEP	106.0	74.0	70	108.0	102	40.0	38
BIG HOLE RIVER near Melrose	APR-JUL	696.0	470.0	68	680.0	98	260.0	37
	APR-SEP	757.0	510.0	67	740.0	98	280.0	37
WILLOW CREEK near Harrison	APR-JUL	18.7	13.8	74	21.0	112	7.0	37
	APR-SEP	21.0	15.5	74	23.0	110	8.0	38

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LIMA	84.0	13.1	29.6	37.5
CLARK CANYON	255.6	170.7	161.2	146.1
RUBY RIVER	38.8	27.0	31.5	27.2

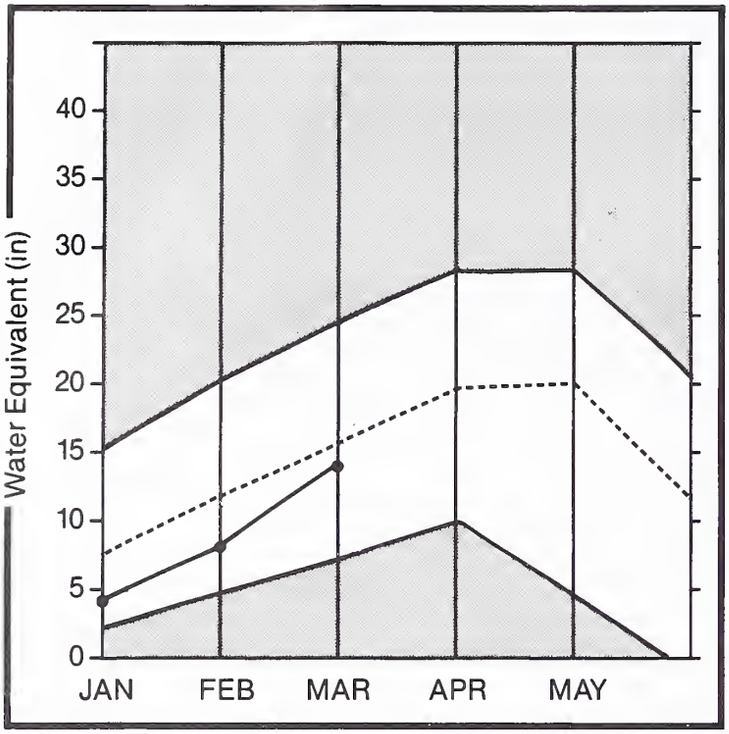
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
BEAVERHEAD	33	111	71
RUBY	13	93	69
BIGHOLE	27	114	72
BOULDER	15	113	70
JEFFERSON	71	110	71

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Madison Basin

Mountain snowpack* (inches)



*Madison

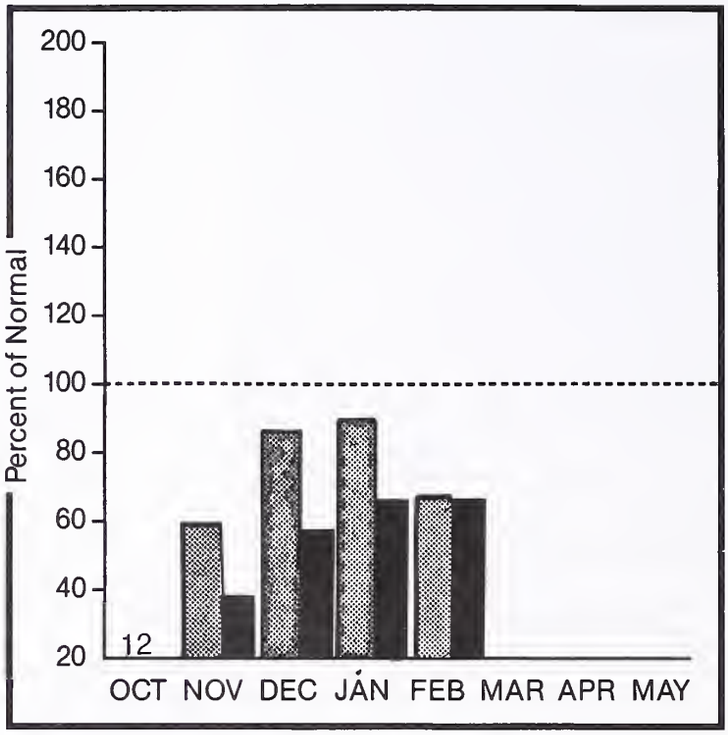
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Mountain precipitation was below average for the sixth consecutive month. The present snowpack has improved slightly over the past month but is still in the 70 to 75 percent of average range. Soils are dry under the snowpack. Streamflows are forecast to be below average in the upper drainages where a significant part of the volume originates. Downstream from Hebgen Dam, flows will be well below average.

For more information contact your local Soil Conservation Service office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MADISON RIVER near Grayling 2	APR-JUL	390.0	320.0	82	390.0	100	250.0	64
	APR-SEP	499.0	405.0	81	495.0	99	315.0	63
MADISON RIVER near McAllister 2	APR-JUL	680.0	535.0	79	660.0	97	410.0	60
	APR-SEP	856.0	660.0	77	815.0	95	505.0	59

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
ENNIS LAKE	41.0	30.7	30.5	34.8
HEBGEN LAKE	377.5	275.2	282.3	235.3

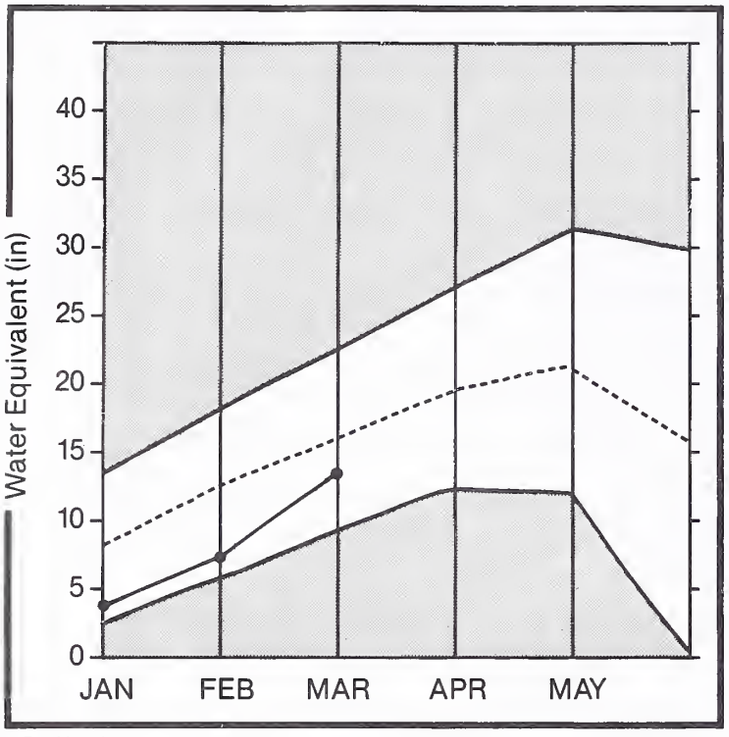
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
MADISON above HEBGEN	17	135	75
LOWER MADISON	21	102	69
MADISON	38	117	72

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Gallatin Basin

Mountain snowpack* (inches)



*Gallatin

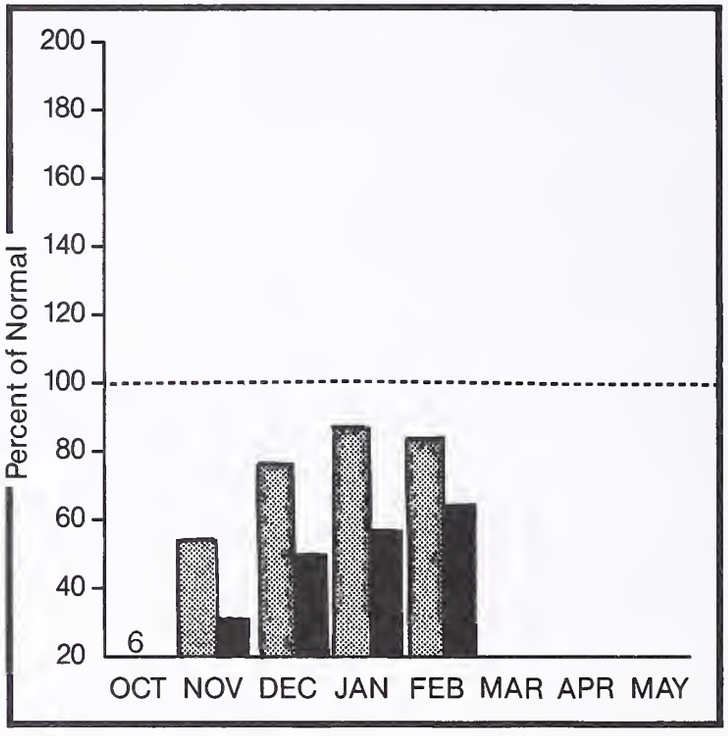
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

During February, the mountain precipitation was about 80 percent of average. This helped increase the snowpacks but only to about 70 percent of average. Mountain precipitation has been below average since last August. Soils continue to be dry under the snow. Streamflows are forecast to be well below average on all drainages. Shortages of irrigation water supplies could become critical unless weather patterns bring in better moisture.

For more information contact your local Soil Conservation Service office.

GALLATIN RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
GALLATIN RIVER near Gateway	APR-JUL	460.0	315.0	68	400.0	87	230.0	50
	APR-SEP	540.0	365.0	68	460.0	85	270.0	50
E & W FK. HYALITE CR. nr Bozeman 2	APR-JUL	24.0	15.8	66	20.0	83	12.0	50
	APR-SEP	28.0	18.1	65	23.0	82	14.0	50
HYALITE CREEK near Bozeman 2	APR-JUL	38.0	25.0	66	33.0	87	17.0	45
	APR-SEP	44.0	29.0	66	38.0	86	20.0	45
GALLATIN RIVER at Logan	APR-JUL	528.0	295.0	56	430.0	81	160.0	30
	APR-SEP	616.0	350.0	57	510.0	83	190.0	31

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MIDDLE CREEK	8.0	5.4	4.7	3.6

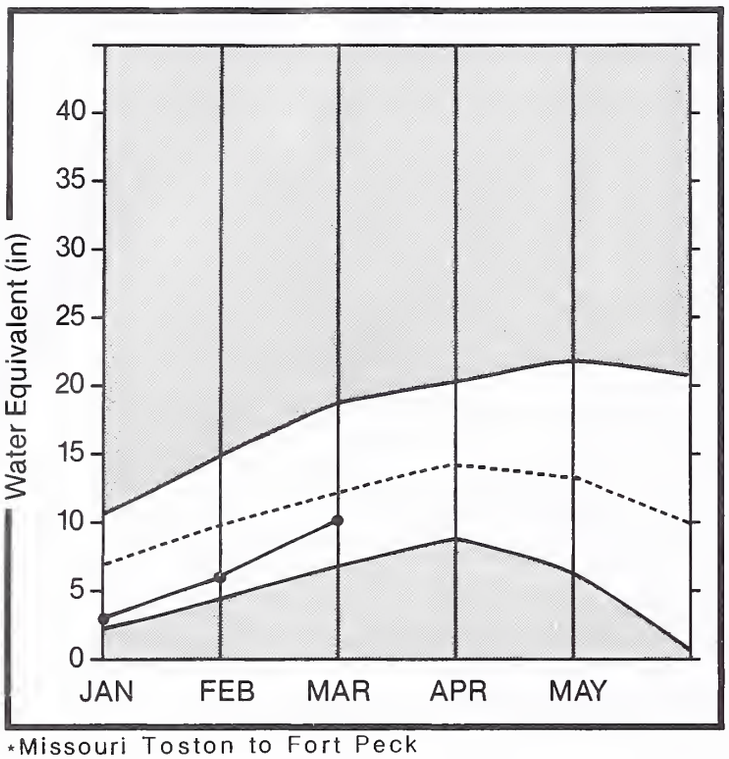
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
UPPER GALLATIN	15	111	69
EAST GALLATIN	13	117	71
GALLATIN	25	115	70

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Missouri Basin

Mountain snowpack* (inches)



*Missouri Toston to Fort Peck

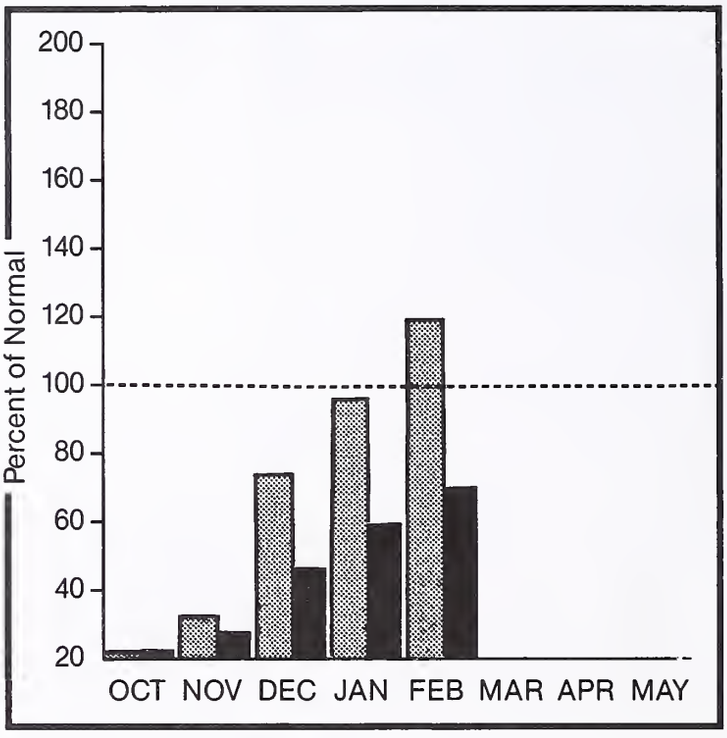
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

Above average precipitation during February helped to improve the snowpack levels. However, they are still only in the 70 to 75 percent of average range. Snowpack is a little better west of the Missouri than in drainages east of the River. Soils are still dry under the snowpack. Below average streamflow is being forecast for all drainages with some irrigation water shortages being anticipated.

For more information contact your local Soil Conservation Service office.

MISSOURI RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
MISSOURI RIVER at Toston 2	APR-JUL	2250.0	1440.0	64	2500.0	111	900.0	40
	APR-SEP	2590.0	1675.0	65	2770.0	107	985.0	38
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL	18.8	12.5	66	20.0	106	5.0	27
	APR-SEP	22.0	14.5	66	23.0	105	6.0	27
BELT CREEK near Monarch	APR-JUL	123.0	72.0	59	116.0	94	28.0	23
	APR-SEP	134.0	78.0	58	126.0	94	30.0	22
MISSOURI RIVER at Fort Benton 2	APR-JUL	3470.0	2070.0	60	3750.0	108	1320.0	38
	APR-SEP	3990.0	2335.0	59	4310.0	108	1520.0	38
MISSOURI RIVER at Virgelle 2	APR-JUL	3960.0	2370.0	60	4435.0	112	1665.0	42
	APR-SEP	4500.0	2615.0	58	5040.0	112	1890.0	42
MISSOURI RIVER near Landusky 2	APR-JUL	4310.0	2605.0	60	4910.0	114	1850.0	43
	APR-SEP	4900.0	2865.0	58	5590.0	114	2110.0	43
N.F. MUSSELSHELL near Delpine	APR-JUL	5.6	3.6	64	6.0	107	2.0	36
	APR-SEP	6.4	4.0	63	7.0	109	2.0	31
S.F. MUSSELSHELL above Martinsdale	APR-JUL	57.0	33.0	58	56.0	98	10.0	18
	APR-SEP	61.0	35.0	57	59.0	97	11.0	18
MISSOURI RIVER below Fort Peck 2	APR-JUL	4260.0	2460.0	58	4940.0	116	1700.0	40
	APR-SEP	4800.0	2705.0	56	5570.0	116	1920.0	40
LAKE SAKAKAWEA Inflow 2	APR-JUL	11000.0	6700.0	61	12000.0	109	4620.0	42
	APR-SEP	12200.0	7695.0	63	13300.0	109	5125.0	42

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
CANYON FERRY LAKE	2043.0	1441.0	1548.0	1563.0
HELENA VALLEY	9.2	4.9	4.4	4.7
LAKE HELENA	10.4	10.9	10.9	10.1
HAUSER & HELENA	61.9	63.1	63.1	60.7
HOLTER LAKE	81.9	76.7	80.5	66.6
SMITH RIVER	10.6	3.3	7.4	7.2
NEWLAN CREEK	12.4	9.3	10.7	8.8
BAIR	7.0	2.0	6.7	4.5
MARTINSDALE	23.1	4.3	11.7	10.0
DEADMAN'S BASIN	72.2	40.3	59.2	48.3
FORT PECK LAKE*	18.9	14.7	15.9	14.9

*Millon Acre Feet

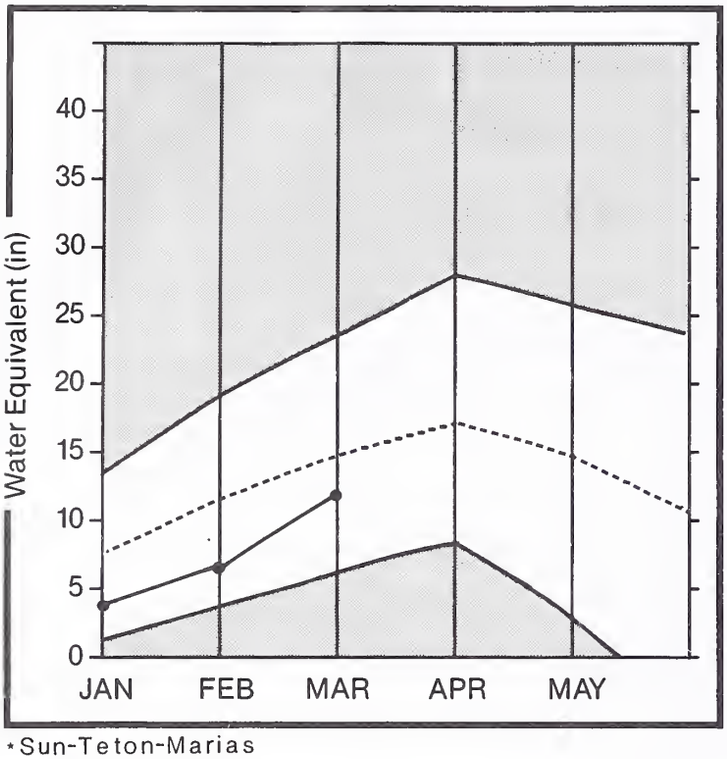
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	117	115	71
WEST SIDE MISSOURI	11	125	76
SMITH-BELT	11	130	68
MISSOURI MAINSTEM	22	128	72
SUN-TETON-MARIAS	18	87	66
JUDITH-MUSSELSHELL	17	152	71
MISSOURI above FORT PECK	159	113	71
MILK HEADWATERS	4	71	54
BEAR PAW	7	153	76
MILK RIVER	11	88	60
MISSOURI in MONTANA	168	113	71
MISSOURI blw YELLOWSTONE	268	107	72

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Sun, Teton and Marias Basins

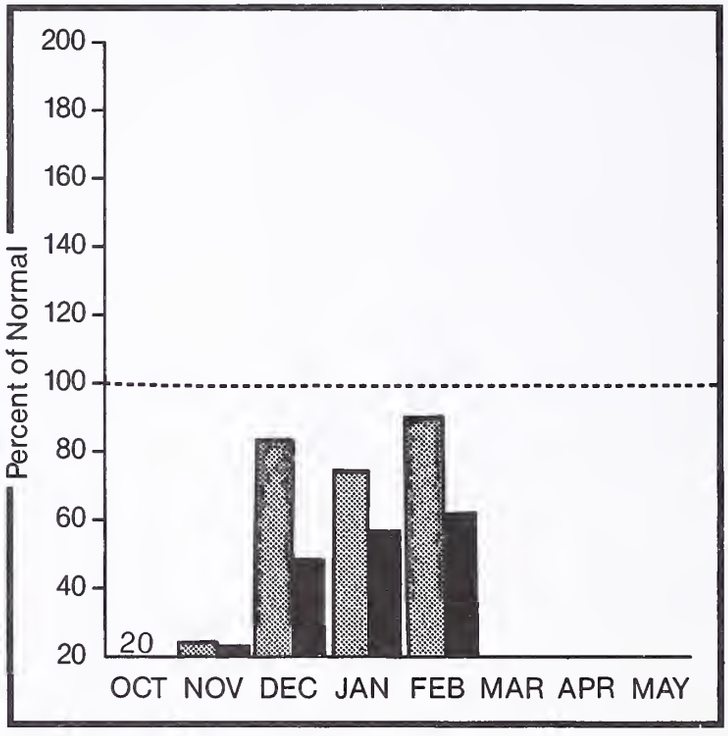
Mountain snowpack* (inches)



*Sun-Teton-Marias

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

Water Supply Outlook

Mountain precipitation was about 90 percent of average in February. This is the sixth consecutive month of below average moisture. Some improvements were recorded in snowpack figures but the amount of water stored in the snow is still 30 to 35 percent of average. Soils under the snowpack are still dry. Spring and summer streamflows are forecast to be well below average even if spring precipitation is near average. Unless weather patterns shift toward more moisture, irrigation water supplies could be in short supply.

For more information contact your local Soil Conservation Service office.

SUN-TETON-MARIAS RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SUN RIVER at Gibson Dam 2	APR-JUL	494.0	325.0	66	445.0	90	205.0	41
	APR-SEP	542.0	350.0	65	480.0	89	220.0	41
TWO MEDICINE CREEK near Browning 2	APR-JUL	222.0	158.0	71	240.0	108	78.0	35
	APR-SEP	235.0	170.0	72	250.0	106	90.0	38
BADGER CREEK near Browning	APR-JUL	107.0	77.0	72	115.0	107	38.0	36
	APR-SEP	123.0	90.0	73	132.0	107	48.0	39
SWIFT RESERVOIR Inflow nr Dupuyer	APR-JUL	70.0	50.0	71	75.0	107	25.0	36
	APR-SEP	82.0	60.0	73	88.0	107	32.0	39
CUT BANK CREEK at Cut Bank	APR-JUL	92.0	65.0	71	98.0	107	32.0	35
	APR-SEP	100.0	72.0	72	106.0	106	38.0	38
MARIAS RIVER near Shelby	APR-JUL	478.0	290.0	61	450.0	94	127.0	27
	APR-SEP	501.0	310.0	62	480.0	96	140.0	28

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
GIBSON	99.1	53.9	56.4	46.4
PISHKUN	32.0	18.1	18.9	18.1
WILLOW CREEK	32.2	24.3	27.3	20.3
LOWER TWO MEDICINE LAKE	11.9	10.3	12.0	8.0
FOUR HORNS LAKE	19.2	13.7	13.5	12.3
SWIFT	30.0	23.8	20.3	14.9
LAKE FRANCES	112.0	93.5	83.2	68.5
LAKE ELWELL (TIBER)	1347.0	675.0	685.0	555.2

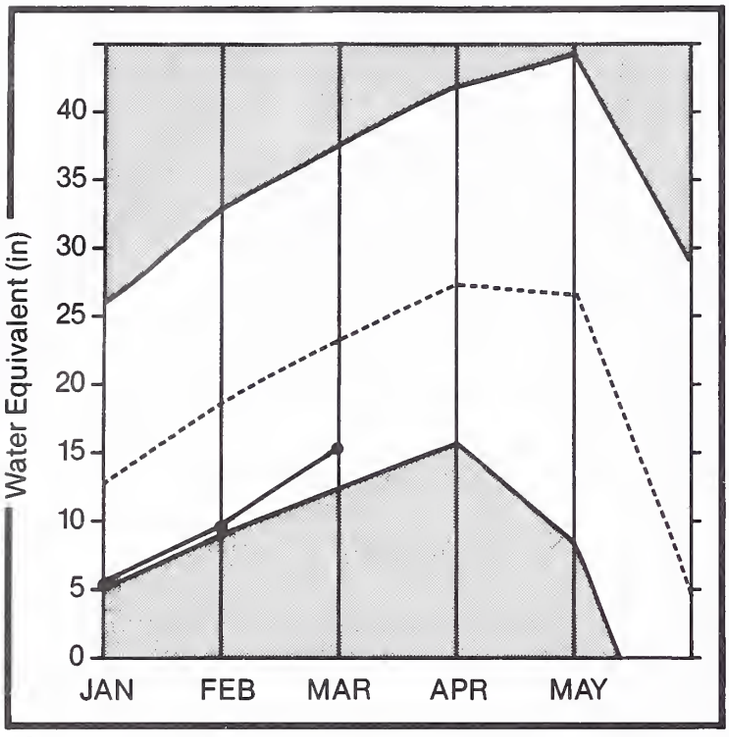
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	13	95	69
MARIAS	6	79	63
SUN-TETON-MARIAS	18	87	66

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

St. Mary and Milk Basins

Mountain snowpack* (inches)



*St. Mary

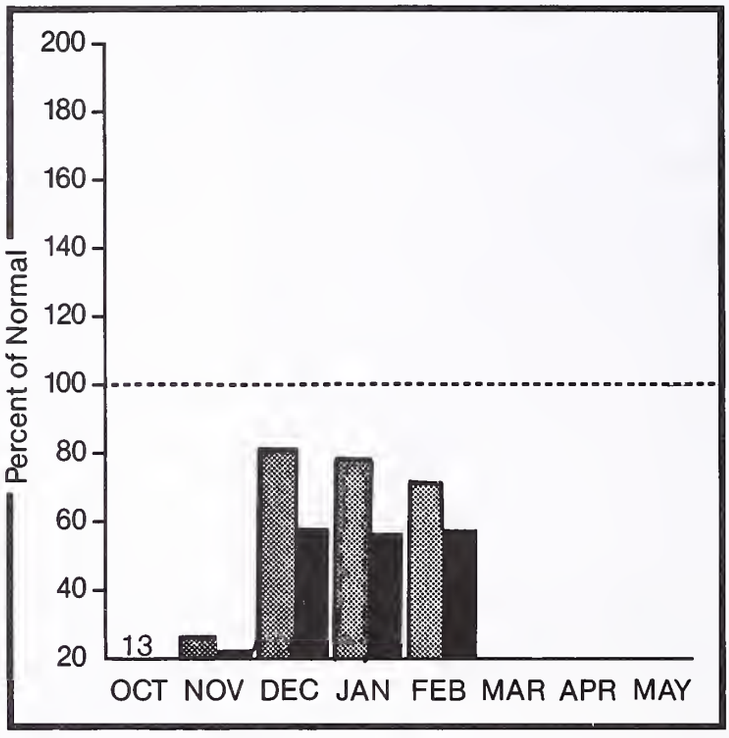
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

Water Supply Outlook

During February, the mountain precipitation was about 70 percent of average across the St. Mary and Milk River headwaters. The current snowpack is about 55 percent of average. The Bear Paw Mountains continue to have a little better snow at about 75 percent of average. Spring and summer streamflows are forecast to be well below average. The natural flow of the Milk River without the St. Mary Canal is expected to produce only one-half of its average runoff.

For more information contact your local Soil Conservation Service office.

ST. MARY and MILK RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
SWIFTCURRENT CREEK at Sherburne 2	APR-JUL	110.0	80.0	73	104.0	95	56.0	51
	APR-SEP	128.0	95.0	74	125.0	98	70.0	55
ST. MARY RIVER near Babb 2	APR-JUL	404.0	295.0	73	360.0	89	230.0	57
	APR-SEP	474.0	350.0	74	425.0	90	275.0	58
MILK RIVER at Eastern Crossing	MAR-SEP	97.0	48.0	49	89.0	92	38.0	39
MILK RIVER at Eastern Crossing 2	MAR-SEP	270.0	235.0	87				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
LAKE SHERBURNE	64.3	38.9	41.2	24.1
FRESNO	127.0	58.8	64.3	51.5
BEAVER CREEK	3.5	2.8	3.3	2.0
NELSON	66.8	42.5	43.4	36.0

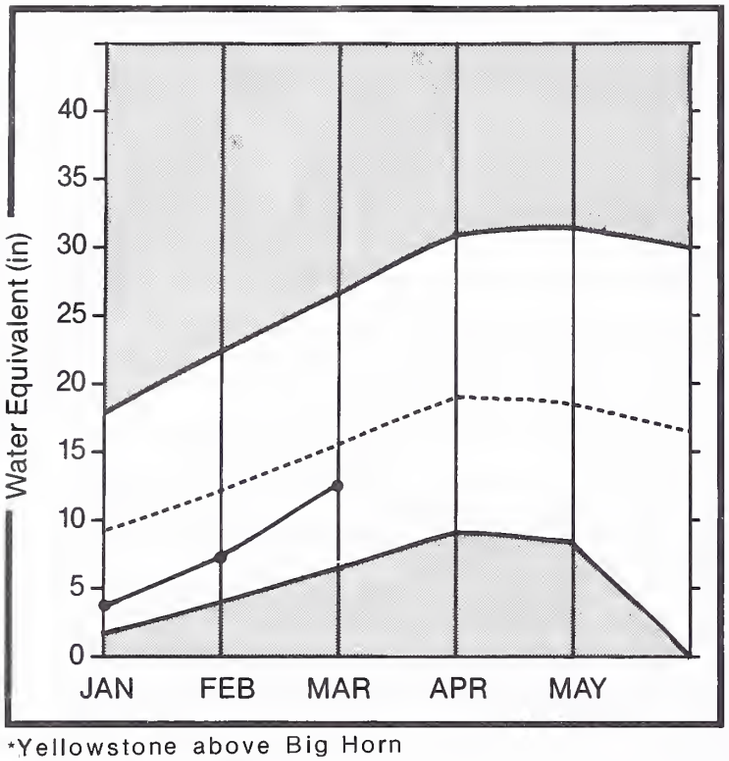
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
MILK HEADWATERS	4	71	54
BEAR PAW	7	153	76
MILK RIVER	11	88	60
ST. MARY	8	74	56
ST. MARY and MILK	15	83	59
BOW RIVER in ALBERTA	15	83	76
OLDMAN RIVER in ALBERTA	4	70	58

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

Yellowstone Basin

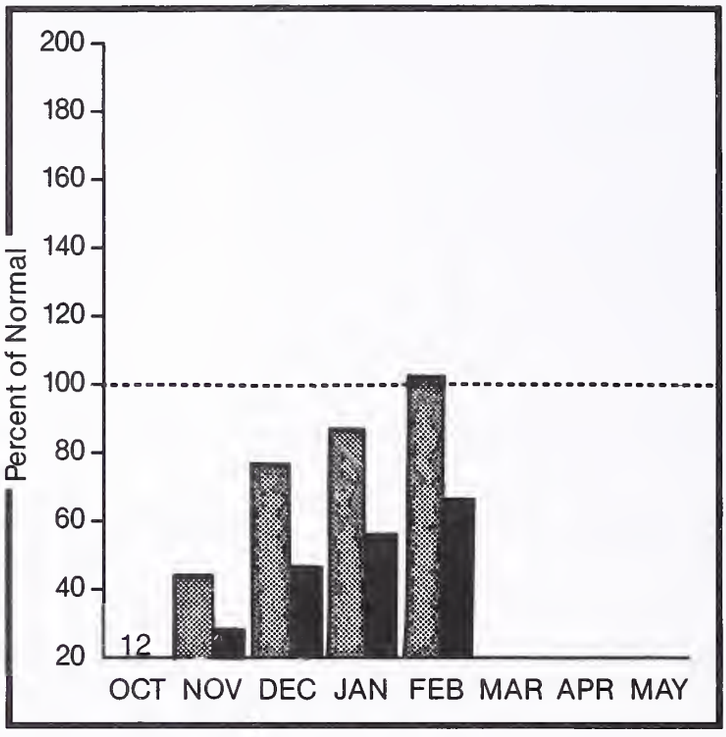
Mountain snowpack* (inches)



*Yellowstone above Big Horn

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

Water Supply Outlook

After five months of below average mountain precipitation, February produced near average moisture across the basin. Snowpacks have improved a little but are still below average in all drainages. Snow in the Bighorn Mountains and most of the Wyoming watersheds is better than in the Absaroka, Beartooth and Crazy Mountains. Spring and summer runoff is forecast to be well below average again this year in Montana tributaries and below average for streams flowing out of Wyoming.

For more information contact your local Soil Conservation Service office.

YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	25 YR. AVG. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVG.)	REAS. MAX. (1000AF)	REAS. MAX. (% AVG.)	REAS. MIN. (1000AF)	REAS. MIN. (% AVG.)
YELLOWSTONE at Lake Outlet	APR-JUL	590.0	410.0	69	505.0	86	315.0	53
	APR-SEP	818.0	580.0	71	710.0	87	450.0	55
YELLOWSTONE at Corwin Springs	APR-JUL	1650.0	1100.0	67	1360.0	82	840.0	51
	APR-SEP	2000.0	1330.0	67	1650.0	83	1010.0	51
YELLOWSTONE near Livingston	APR-JUL	1920.0	1225.0	64	1530.0	80	920.0	48
	APR-SEP	2330.0	1490.0	64	1860.0	80	1120.0	48
BOULDER RIVER at Big Timber	APR-JUL	353.0	265.0	75	350.0	99	180.0	51
	APR-SEP	384.0	280.0	73	370.0	96	190.0	49
STILLWATER RIVER nr Absarokee 2	APR-JUL	524.0	380.0	73	550.0	105	210.0	40
	APR-SEP	625.0	460.0	74	660.0	106	260.0	42
CLARKS FORK RIVER near Belfry	APR-JUL	540.0	360.0	67	520.0	96	200.0	37
	APR-SEP	603.0	400.0	66	580.0	96	220.0	36
COONEY RESERVOIR Inflow	APR-JUL	49.0	27.0	55	43.0	88	11.0	22
	APR-SEP	60.0	34.0	57	53.0	88	15.0	25
YELLOWSTONE RIVER at Billings	APR-JUL	3740.0	2580.0	69	3330.0	89	2020.0	54
	APR-SEP	4410.0	3000.0	68	3925.0	89	2380.0	54
BIGHORN RIVER near St. Xavier 2	APR-JUL	1750.0	1235.0	71	2080.0	119	735.0	42
	APR-SEP	1900.0	1350.0	71	2260.0	119	800.0	42
LITTLE BIGHORN RIVER near Hardin	APR-JUL	148.0	130.0	88	200.0	135	35.0	24
	APR-SEP	167.0	142.0	85	230.0	138	40.0	24
TONGUE RIVER near Decker	APR-JUL	234.0	190.0	81	310.0	132	65.0	28
	APR-SEP	260.0	205.0	79	345.0	133	73.0	28
YELLOWSTONE RIVER at Miles City 2	APR-JUL	5640.0	3870.0	69	5750.0	102	2650.0	47
	APR-SEP	6510.0	4480.0	69	6640.0	102	3060.0	47
POWDER RIVER at Moorehead	APR-JUL	230.0	185.0	80	290.0	126	57.0	25
	APR-SEP	251.0	185.0	74	319.0	127	63.0	25
YELLOWSTONE RIVER near Sidney 2	APR-JUL	6260.0	4320.0	69	6385.0	102	2755.0	44
	APR-SEP	7200.0	4840.0	67	7345.0	102	3170.0	44

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVG.
MYSTIC LAKE	21.0	1.7	2.1	6.5
COONEY	27.4	21.5	16.3	14.5
BIGHORN LAKE	1356.0	835.4	812.0	660.0
TONGUE RIVER	68.0	23.2	---	30.7

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVG'D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	24	112	67
SHIELDS	10	128	68
BOULDER-STILLWATER	6	106	75
CLARK'S FORK-ROCK CREEK	20	105	68
YELLOWSTONE above BIGHORN	47	111	68
LITTLE BIGHORN	5	117	83
WIND RIVER (Wyoming)	30	81	83
BIGHORN RIVER (Wyoming)	33	96	73
BIGHORN BASIN (Total)	58	90	77
TONGUE RIVER (Wyoming)	15	106	82
POWDER RIVER (Wyoming)	15	96	77
YELLOWSTONE RIVER	116	100	74

1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.
2 - Corrected for upstream diversions or changes in reservoir storage.
The average is computed for the 1961-85 base period.

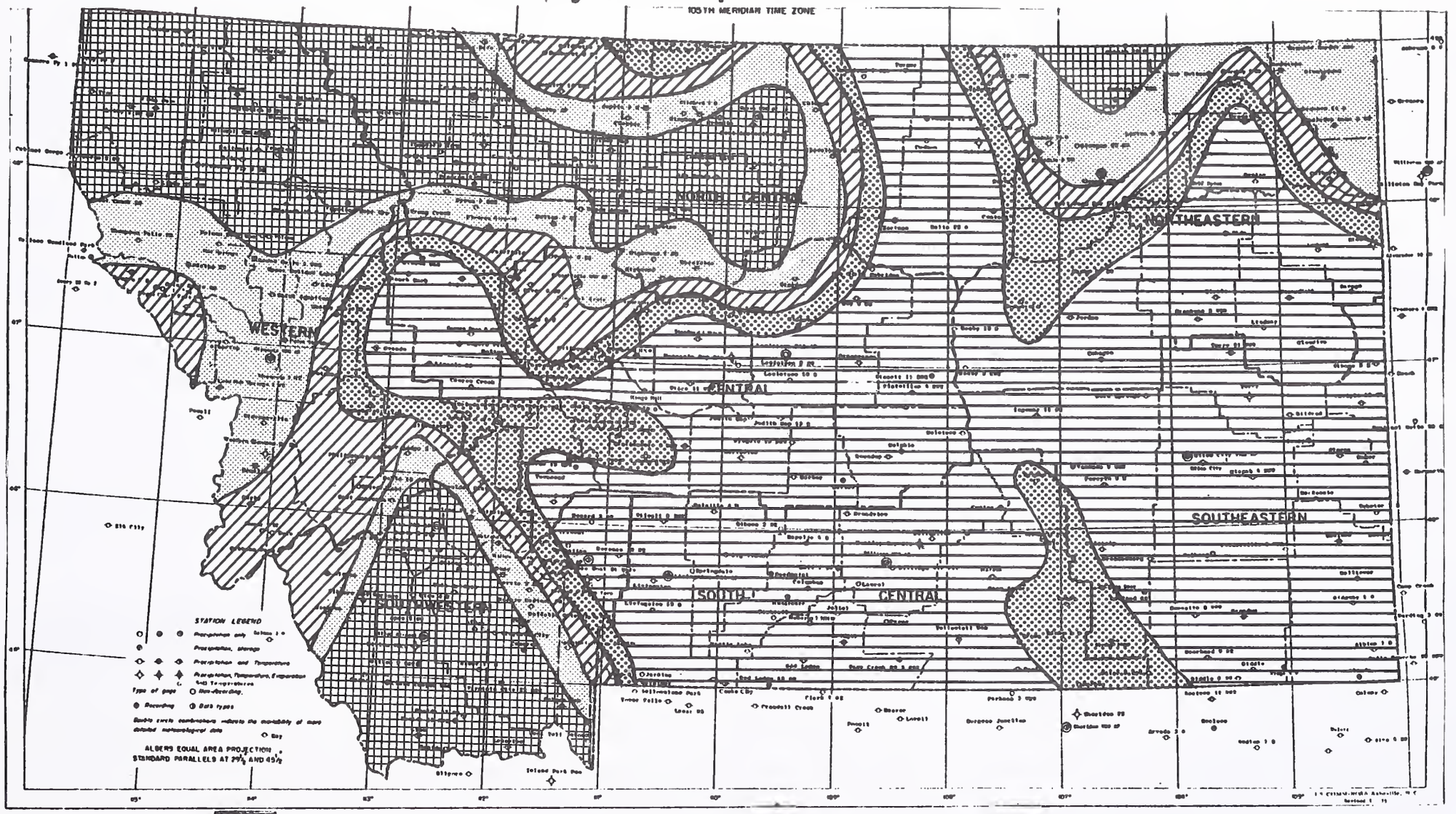
Snow Data Measurements

SNOW COURSE	ELEVATION	OATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-8S
MONTANA						
A8UNOANCE LAKE	8800	2/25/88	42	12.6	11.0	17.6
AMBROSE	6480	2/2S/88	32	9.8	6.2	11.3
ARCH FALLS	7350	2/29/88	29	7.9	S.8	10.1
ASHLEY OIVIOE	4820	2/26/88	20	5.0	3.6	6.2
8ADGER PASS PILLOW	6900	3/01/88	---	20.2	23.9	29.S
8ADGER PASS	6900	2/24/88	69	22.2	27.7	33.7
8ALO EAGLE PEAK	S700	3/01/88	102	34.8E	--	53.S
8ALD RIOGE	7S00	2/25/88	28	7.6	S.0	10.9
8ANFIELD MTN PILLOW	S600	3/01/88	---	10.8	14.3	18.1
8ANFIELD MOUNTAIN	S600	2/23/88	39	10.8	12.3	20.8
8AREE CREEK	S500	2/25/88	71	24.2	29.4	41.0
8AREE MIOWAY	4600	2/2S/88	66	21.3	19.9	31.9
8AREE TRAIL	3800	2/2S/88	21	S.6	6.7	8.8
8ARKER LAKES PILLOW	82S0	3/01/88	---	8.0	10.2	12.7
8ASIN CREEK	7180	2/29/88	20	4.1	S.6	7.0
8ASIN CREEK PILLOW	7180	3/01/88	---	3.6	5.3	6.9
8ASSOO PEAK	S150	2/29/88	24	6.1	5.8	10.5
8EAGLE SPRINGS	88S0	2/26/88	27	6.9	7.4	7.5
8EAGLE SPGS PILLOW	88S0	3/01/88	---	6.8	5.6	6.9
8EAR 8ASIN	8150	2/24/88	49	14.1	11.0	18.2
8EAR PAW SKI AREA	S200	2/25/88	24	5.5	2.8	6.6
8EAVER CREEK PILLOW	7850	3/01/88	---	10.7	9.0	15.8
8ERRY MEADOW	7000	2/24/88	19	5.4	4.6	6.8
8IG CREEK	67S0	2/27/88	68	24.0	24.0	38.2
8IG SKY	7700	3/01/88	3S	11.0	9.0	13.2
8IG SKY MEADOW	6350	2/24/88	24	S.6	S.3	8.5
8IG SNOWY	7150	2/24/88	4S	11.8	8.0	18.2
BLACK 8EAR	79S0	2/26/88	81	29.7	18.8	35.0
8LACK 8EAR PILLOW	79S0	3/01/88	---	2S.4	18.9	31.8
8LACK MOUNTAIN	77S0	3/01/88	31	8.6	7.0	13.0
8LACK PINE PILLOW	7100	3/01/88	---	9.3	6.4	12.1
8LACK PINE	7100	3/01/88	28	8.6	6.4	11.8
8LACKTAIL	S650	2/23/88	31	7.8	7.2	--
8LOOOY DICK PILLOW	7550	3/01/88	---	8.1	7.7	10.9
8LOOOY OICK	7600	2/2S/88	33	9.0	7.2	11.8
8LUE LAKE	S900	2/24/88	S0	14.7	16.2	22.6
BOTS SOTS	7750	2/26/88	24	S.6	4.1	6.3
80ULDER MOUNTAIN	7950	2/23/88	41	11.2	8.6	16.5
BOULOER MTN PILLOW	7950	3/01/88	---	11.8	12.0	17.9
80X CANYON	6670	2/26/88	29	10.0	6.6	10.5
BOX CANYON PILLOW	6700	3/01/88	---	6.7	6.8	8.4
80XELDER CREEK	5100	2/25/88	26	5.6	5.8	7.5
BRANHAM LAKES	8850	2/25/88	55	17.7	19.8	25.0
BRIDGER BOWL PILLOW	72S0	3/01/88	---	13.6	13.6	21.7
BRIDGER BOWL	7250	2/25/88	48	14.6	11.5	22.6
8RISTOW CREEK	3900	2/23/88	22	S.4	9.1	10.5
BRUSH CREEK TIMBER	5000	2/25/88	18	4.4	S.1	9.0
8ULL MOUNTAIN	6600	2/2S/88	15	3.6	4.6	5.1
CA8IN CREEK	S200	2/24/88	21	S.0	4.2	6.0
CALL ROAD	8050	2/26/88	26	6.4	7.4	9.8
CALVERT CREEK	6430	3/01/88	28	7.2	S.2	10.2
CALVERT CR PILLOW	6430	3/01/88	---	6.0	4.6	8.4
CAMP MISERY	6400	2/24/88	79	28.1	28.3	42.2
CAMP SENIA	7890	2/26/88	18	3.1	2.6	4.8
CARROT 8ASIN PILLOW	9000	3/01/88	---	14.4	16.2	23.3
CARROT 8ASIN	9000	2/23/88	61	18.8	18.8	30.6
CASHE CREEK PILLOW	7800	3/01/88	---	7.4	5.9	7.9
CEDAR GROVE	3760	2/23/88	29	8.6	7.7	11.1
CHESSMAN RESERVOIR	6200	2/29/88	12	3.0	1.5	3.4
CHICKEN CREEK	4060	2/25/88	39	11.9	10.6	14.5
CLOVER MDW PILLOW	8800	3/01/88	---	9.S	12.9	14.7
CLOVER MEADOW	8600	2/26/88	35	9.0	10.6	14.4
COLE CREEK	7850	2/23/88	34	6.0	12.1	13.7
COLE CREEK PILLOW	7850	3/01/88	---	7.0	13.1	14.2
COLLEY CREEK	6300	2/20/88	27	5.2	3.6	7.3
COMBINATION	S600	2/29/88	18	3.6	3.2	S.0
COMBINATION PILLOW	5600	3/01/88	---	4.7	3.2	S.2
COOKE STATION	8150	2/29/88	40	12.0	9.1	17.1
COPPER 80TTOM	5200	2/24/88	34	9.S	7.1	10.6
COPPER 80TTOM PILLOW	S200	3/01/88	---	8.7	7.6	11.9
COPPER CAMP PILLOW	6950	3/01/88	---	19.6	16.6	30.6
COPPER CAMP	6950	2/24/88	62	20.6	16.9	27.1
COPPER CREEK	5700	2/24/88	39	10.6	7.8	13.8
COPPER MOUNTAIN	7700	2/25/88	26	6.0	4.0	9.6
COTTONWOOD CREEK	6400	2/2S/88	22	S.0	3.7	6.9
COYOTE HILL	4200	2/29/88	27	8.0	7.0	9.7
CREVICE MOUNTAIN	8400	3/01/88	27	S.8	4.1	9.3
CRYSTAL LAKE	6050	2/24/88	37	8.6	S.1	11.8
CRYSTAL LAKE PILLOW	6050	3/01/88	---	9.7	6.1	11.7
DAO CREEK LAKE	8400	2/26/88	32	8.0	11.4	11.2
DAISY PEAK	7600	2/26/88	2S	5.6	3.7	9.6
OALY CREEK	S780	2/2S/88	32	8.7	6.6	10.0
OALY CREEK PILLOW	S780	3/01/88	---	7.8	6.2	9.S
DARKHORSE LK. PILLOW	8700	3/01/88	---	14.7	14.7	20.7
DARKHORSE LAKE	8600	2/2S/88	S2	16.6	--	23.S
OAVIS CREEK	5400	2/23/88	49	14.0	16.8	20.9
DEADMAN CR PILLOW	6450	3/01/88	---	7.3	4.6	9.2
DEADMAN CREEK	6450	2/29/88	26	7.6	4.7	10.1
DESERT MOUNTAIN	5600	2/24/88	27	7.9	10.3	13.8
OEVILS SLIDE	8100	2/29/88	41	11.8	11.8	18.5
DISCOVERY 8ASIN	7050	3/02/88	2S	6.4	6.4	9.I
OIVIDE	7800	2/26/88	28	7.2	5.4	9.5
OIVIDE PILLOW	7800	3/01/88	---	6.1	S.8	10.0
OIX HILL	6400	2/21/88	33	9.5	6.4	I1.I
OUPUYER CREEK PILLOW	S750	3/01/88	---	7.4	7.1	11.2
EAST FORK R.S.	S400	2/26/88	24	6.9	3.8	6.2
EL OORADO MINE	7800	2/29/88	41	12.3	12.3	17.4
ELK HORN SPRINGS	7800	2/2S/88	26	6.6	3.3	8.1
ELK PEAK	8000	2/22/88	33	8.2	7.6	14.0
EMERY CREEK	4350	2/24/88	36	9.6	10.I	14.9
EMERY CREEK PILLOW	4350	3/01/88	---	9.3	10.6	14.4
FATTY CREEK	S500	2/27/88	S0	13.5	15.5	20.6
FISH CREEK	8000	2/29/88	20	4.2	6.4	8.1
FISHER CREEK PILLOW	9100	3/01/88	---	21.6	19.6	30.9
FISHER CREEK	9100	2/29/88	67	22.8	19.6	32.7
FIVE-8ULL	S700	2/24/88	1S	3.1	3.0	6.0
FLATTOP MTN PILLOW	6300	3/01/88	---	2S.2	31.7	40.7
FLEECER RIDGE	7500	2/25/88	27	6.8	7.0	9.3
FOOLHEN	8280	2/2S/88	37	9.8	9.0	14.4
FOUR MILE	6900	2/26/88	23	5.2	6.2	7.3
FOURTH OF JULY	3450	2/23/88	25	7.2	6.7	8.5
FRED 8URR PASS	8000	2/26/88	47	1S.3	13.6	21.3
FREIGHT CREEK	6000	2/24/88	36	9.2	10.6	13.2
FRIOAY HILL	4620	2/23/88	38	10.7	13.1	18.7
FROHNER MEAOOWS	6480	2/29/88	19	S.2	4.7	7.2
FROHNER MDWS PILLOW	6480	3/01/88	---	4.4	4.7	7.9
GARVER CREEK PILLOW	4250	3/01/88	---	5.8	7.I	9.3
GARVER CREEK	4250	2/23/88	25	6.1	7.8	10.1
GI88ONS PASS	7100	2/26/88	48	15.6	11.6	20.5
GOAT MOUNTAIN	7000	2/25/88	28	6.5	6.8	9.4
GOLD CREEK LAKE	7200	2/29/88	34	10.2	8.4	12.9
GOLO STONE	8100	2/25/88	38	10.3	9.6	14.9
GRASSHOPPER	7000	2/23/88	14	2.8	2.8	S.0
GRAVE CRK PILLOW	4300	3/01/88	---	9.0	12.5	16.0
GRAVE CREEK	4300	2/24/88	33	9.1	14.2	16.2
GRIFFIN CR OIVIDE	51S0	2/29/88	24	6.4	6.4	10.5
GUNSIGHT LAKE	6300	2/24/88	83	28.1	26.S	3S.7
HANO CREEK	5030	2/25/88	28	6.8	7.4	12.1
HAND CREEK PILLOW	S030	3/01/88	---	6.2	6.8	11.8
HAWKINS LAKE PILLOW	6450	3/01/88	---	14.9	18.0	24.3
HAWKINS LAKE	6450	2/23/88	S3	17.9	22.0	26.3
HEART LAKE TRAIL	4800	2/28/88	46	15.2	13.7	19.5
HEBGEN OAM	6SS0	2/23/88	31	7.4	6.3	11.1
HELL ROARING DIVIDE	S770	2/26/88	53	16.4	18.1	27.4
HERRIG JUNCTION	48S0	2/25/88	50	15.6	17.6	24.3
HOLBROOK	4S30	2/26/88	25	6.6	5.2	9.1
HOOD MEADOW	6600	2/29/88	26	7.0	5.3	9.0
HOODOO 8ASIN PILLOW	6050	3/01/88	---	27.6	27.3	41.4
HOODOO 8ASIN	60S0	2/28/88	89	33.0	31.8	43.9
HOODOO CREEK	S900	2/28/88	80	28.9	27.4	40.7
INOEPENDENCE	7850	2/26/88	40	12.0	11.0	16.0
INTERGAARO	6450	2/22/88	23	5.8	4.4	7.1
JAHNKE LAKE TRAIL	7200	2/2S/88	26	6.6	S.3	8.8
JOHNSON PARK	6450	2/26/88	21	5.6	2.7	6.6
KEELER CREEK	3300	2/23/88	29	9.4	9.9	13.6
KINGS HILL	7S00	2/29/88	31	9.4	5.0	11.9
KISHENEHN	3890	3/01/88	18	4.2	3.6	7.9
KIWANIS CAMP	3720	2/25/88	5	1.2	.4	2.0
KRAFT CREEK PILLOW	4750	3/01/88	---	9.6	8.2	11.I
LAKE CREEK	6100	2/26/88	19	4.0	4.0	7.7
LAKEVIEW CANYON	6930	2/25/88	22	4.1	4.6	10.0
LAKEVIEW ROG. PILLOW	7400	3/01/88	---	S.8	5.9	11.2
LAKEVIEW RIDGE	7400	2/2S/88	21	4.2	4.2	9.1
LEMHI PASS	7480	2/2S/88	26	6.3	7.2	7.7
LEMHI RIDGE	8100	2/25/88	28	7.0	8.2	8.7
LEMHI RIDGE PILLOW	8100	3/01/88	---	6.6	6.8	9.2
LICK CREEK PILLOW	6860	3/01/88	---	6.6	5.8	8.4
LICK CREEK	6860	2/29/88	29	7.6	6.1	8.5
LITTLE PARK	7400	2/24/88	38	10.2	8.2	14.0
LOGAN CREEK	4300	2/2S/88	19	4.0	4.4	7.0
LONE MOUNTAIN	8880	3/01/88	44	13.2	12.9	19.6

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
LOST HORSE	5940	2/24/88	73	23.7	20.5	28.7
LOST SOUL	4800	2/23/88	35	9.1	10.9	14.6
LOWER TWIN PILLOW	7900	3/01/88	---	9.9	14.0	16.8
LOWER TWIN	7900	2/26/88	45	14.8	14.8	18.3
LUBRECHT FLUME	4680	2/28/88	17	4.6	3.6	5.5
LUBRECHT PILLOW	4680	3/01/88	---	5.1	3.6	5.5
LUBRECHT FORE5T NO 3	5450	2/27/88	20	5.0	3.2	6.5
LUBRECHT FORE5T NO 4	4650	2/27/88	11	2.7	1.8	3.3
LUBRECHT FORE5T NO 6	4040	2/27/88	13	3.6	2.6	3.9
LUBRECHT HYDROPLOT	4200	2/28/88	20	5.0	4.0	6.8
MADISON PLT PILLOW	7750	2/26/88	---	15.3	11.8	20.6
MADISON PLATEAU	7750	2/26/88	51	16.7	11.9	19.3
MANY GLACIER	4900	2/27/88	33	10.4	12.4	18.5
MANY GLACIER PILLOW	4900	3/01/88	---	8.3	11.7	16.7
MARIA5 PA55	5250	2/28/88	28	7.4	11.3	15.5
MAYNARD CREEK	6210	2/25/88	34	10.5	7.3	13.2
MAYNARD CR PILLOW	6210	2/25/88	---	6.9	5.5	9.6
MIDDLE MILL CREEK	7850	2/25/88	37	11.7	9.9	14.2
MILL CREEK	7500	2/20/88	38	7.8	6.2	11.0
MINERAL CREEK	4000	2/27/88	35	10.4	13.8	16.3
MONUMENT PK PILLOW	8850	3/01/88	---	11.7	11.7	17.8
MONUMENT PEAK	8850	2/26/88	50	14.8	13.6	22.9
MOS5 PEAK	6780	2/27/88	66	23.5	27.8	--
MOS5 PEAK PILLOW	6780	3/01/88	---	20.2	22.8	34.4
MOULTON RESERVOIR	6850	3/01/88	20	4.7	3.2	5.7
MT LOCKHART PILLOW	6400	3/01/88	---	13.3	14.5	18.1
MOUNT LOCKHART	6400	2/29/88	45	14.0	14.8	20.0
MUDD LAKE	7650	3/01/88	42	13.2	9.8	17.6
MULE CREEK	8300	2/29/88	36	10.2	9.0	12.7
MULE CREEK PILLOW	8300	3/01/88	---	10.1	10.4	11.4
NEVADA CREEK	6480	2/24/88	38	10.5	7.5	11.6
NEVADA CREEK PILLOW	6480	3/01/88	---	9.3	7.1	11.4
NEW WORLD	6900	2/25/88	37	10.4	9.4	12.5
NEWTON MOUNTAIN	5600	2/23/88	58	17.0	18.5	31.4
NEZ PERCE CMP PILLOW	5650	3/01/88	---	11.9	8.1	13.2
NEZ PERCE CAMP	5650	2/27/88	41	13.4	8.2	13.5
NEZ PERCE CREEK	6600	2/25/88	19	3.4	3.9	6.2
NEZ PERCE PA55	6570	2/27/88	41	13.6	9.0	15.0
NOI5Y BA5IN	6040	2/24/88	77	26.4	27.0	37.8
NOI5Y BA5IN PILLOW	6040	3/01/88	---	22.7	20.3	33.4
N.F. ELK CR PILLOW	6250	3/01/88	---	8.2	6.2	11.2
N.F. ELK CREEK	6250	2/28/88	29	7.9	6.3	10.5
NORTH FORK JOCKO	6330	2/27/88	78	24.6	25.2	39.4
NORTH MEADOW	7500	2/26/88	22	4.4	6.6	7.0
N.E. ENTRANCE PILLOW	7350	3/01/88	---	5.7	4.6	8.2
NORTHEA5T ENTRANCE	7350	3/01/88	20	4.6	4.3	8.4
NOTCH	8500	2/26/88	28	7.0	7.7	13.2
OPHIR PARK	7150	2/21/88	41	12.2	9.2	15.0
PETERSON MDW PILLOW	7200	2/29/88	---	6.0	6.4	9.0
PETER5ON MEADOW5	7200	2/29/88	24	6.5	5.8	8.5
PICKFOOT CREEK	6650	2/23/88	23	5.7	5.3	9.9
PICKFOOT CRK PILLOW	6650	3/01/88	---	6.0	7.7	9.4
PIKE CREEK PILLOW	5930	3/01/88	---	13.8	20.7	23.6
PIPE5TONE PASS	7200	2/25/88	12	2.5	3.2	4.2
PLACER BA5IN PILLOW	8830	3/01/88	---	11.7	13.3	13.6
POORMAN CREEK	5100	2/23/88	60	18.8	22.1	30.8
PORCUPINE PILLOW	6500	3/01/88	---	4.1	3.1	6.5
PORCUPINE	6500	2/25/88	16	4.0	2.4	6.5
POTOMAGETON PARK	7150	2/26/88	36	10.6	6.8	13.0
RED MOUNTAIN	6000	2/29/88	30	8.5	10.0	16.7
RED TOP	5260	2/23/88	47	13.6	17.0	25.5
ROCK CREEK	5600	2/25/88	32	9.0	4.7	8.6
ROCK CREEK MEADOW	8160	2/19/88	51	12.2	12.0	17.9
ROCKER PEAK	8000	2/24/88	36	9.8	7.3	12.6
ROCKER PEAK PILLOW	8000	3/01/88	---	8.1	7.8	12.5
ROCKY BOY	4700	2/25/88	14	3.2	1.6	4.2
ROCKY BOY PILLOW	4700	2/25/88	---	4.0	3.4	5.2
SACAJAWEA	6550	2/25/88	28	8.3	6.1	12.5
SADDLE MTN PILLOW	7900	3/01/88	---	16.9	13.2	22.6
SADDLE MOUNTAIN	7940	2/26/88	52	16.8	13.4	22.0
SENTINEL CREEK	8300	2/26/88	48	15.2	11.7	20.1
SHORT CREEK	7000	2/24/88	13	3.2	3.3	--
SHOWER FALLS	8100	2/29/88	44	13.0	11.9	19.6
SHOWER FALL5 PILLOW	8100	3/01/88	---	14.0	13.2	20.3
SILVER RUN	6630	2/26/88	14	2.1	3.2	5.0
SILVER RUN PILLOW	6630	3/01/88	---	3.7	3.9	5.4
SKALKAHO PILLOW	7260	3/01/88	---	16.1	13.4	21.1
SKALKAHO SUMMIT	7250	2/25/88	55	18.2	14.8	22.7
SKYLARK TRAIL PILLOW	6200	3/01/88	---	24.7	18.7	27.9
SLAG-A-MELT LAKE	8750	2/25/88	43	13.2	11.8	22.5
SLIDE ROCK MOUNTAIN	7100	3/01/88	34	10.3	8.0	13.8
SMUGGLER MINE	6960	2/25/88	27	7.6	7.0	8.6
S.F. SHIELDS PILLOW	8100	3/01/88	---	10.3	7.9	15.1
S.F. SHIELDS	8100	2/25/88	47	14.6	11.2	20.6
SPOTTED BEAR MTN.	7000	2/24/88	33	9.8	9.9	13.7
SPUR PARK PILLOW	8100	3/01/88	---	13.6	8.8	19.0
SPUR PARK	8100	2/29/88	41	12.5	7.0	18.1

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
STAHL PEAK	6030	2/24/88	60	19.3	33.4	34.8
STAHL PEAK PILLOW	6030	3/01/88	---	16.7	27.9	31.7
STEMPLE PA55	6600	3/01/88	29	6.4	5.2	8.8
STORM LAKE	7780	2/29/88	31	8.6	7.3	11.0
STRYKER BA5IN	6180	2/25/88	53	15.9	24.9	28.9
STUART MILL	6500	2/22/88	22	4.7	4.3	5.8
STUART MOUNTAIN	7400	2/27/88	59	20.4	20.4	28.1
SUCKER CREEK	3960	2/25/88	0	.0	.2	.4
TAYLOR ROAD	4080	2/25/88	12	2.8	.4	3.4
TEN MILE LOWER	6600	2/29/88	22	5.4	4.0	6.5
TEN MILE MIDDLE	6800	2/26/88	30	7.5	6.2	9.7
TEN MILE UPPER	8000	2/26/88	34	9.2	7.0	11.8
TEPEE CREEK PILLOW	8000	3/01/88	---	7.6	7.2	11.5
TEPEE CREEK	8000	2/26/88	33	8.3	9.1	12.9
TIMBERLINE CREEK	8850	2/26/88	34	8.2	7.1	11.8
TRAIL CREEK	7090	2/24/88	23	5.2	5.4	7.0
TRINKUS LAKE	6100	2/24/88	82	28.7	28.0	37.9
TRUMAN CREEK	4060	2/29/88	10	2.6	2.8	3.8
TV MOUNTAIN	6800	2/27/88	40	12.4	9.1	16.3
TWELVEMILE PILLOW	5600	3/01/88	---	13.8	11.1	17.0
TWELVEMILE CREEK	5600	2/24/88	58	19.1	15.6	20.3
TWENTY-ONE MILE	7150	2/27/88	37	10.7	6.7	15.5
TWIN CREEK5	3580	2/24/88	28	8.6	8.0	11.2
TWIN LAKE5 PILLOW	6400	3/01/88	---	28.6	25.0	36.9
TWIN LAKE5	6510	2/24/88	86	28.1	28.2	36.5
UPPER HOLLAND LAKE	6200	2/24/88	75	24.5	21.8	31.4
WALDRON PILLOW	5600	3/01/88	---	7.4	7.6	9.4
WALDRON	5600	2/29/88	21	5.4	7.4	9.2
WARM SPRING5	7800	2/26/88	41	12.0	10.0	19.9
WARM SPRINGS PILLOW	7800	3/01/88	---	12.5	11.4	22.7
WEA5EL DIVIDE	5450	2/24/88	57	18.0	23.7	30.5
WE5T YELL'5T PILLOW	6700	2/27/88	---	5.0	4.3	8.2
WEST YELLOWSTONE	6700	2/27/88	25	6.4	5.0	10.7
WHISKEY CREEK PILLOW	6800	3/01/88	---	10.3	8.8	14.6
WHI5KEY CREEK	6800	2/26/88	48	11.6	10.4	17.7
WHITE MILL PILLOW	8700	3/01/88	---	13.4	13.1	21.7
WHITE MILL	8700	2/29/88	52	17.2	12.9	23.9
WHITE PINE RIDGE	8850	2/26/88	17	3.7	5.7	4.5
WILLOW CREEK	6500	2/23/88	24	4.1	6.0	7.4
WOOD CREEK	5960	2/24/88	26	6.5	7.3	9.1
WOOD CREEK PILLOW	5960	3/01/88	---	5.9	6.3	9.5
WRONG CREEK	5700	2/22/88	35	8.6	7.8	12.5
WRONG RIDGE	6800	2/23/88	42	11.4	11.4	17.0

Valley Precipitation



Over 130%

110 - 130%

90 - 110%

70 - 90%

Under 70%

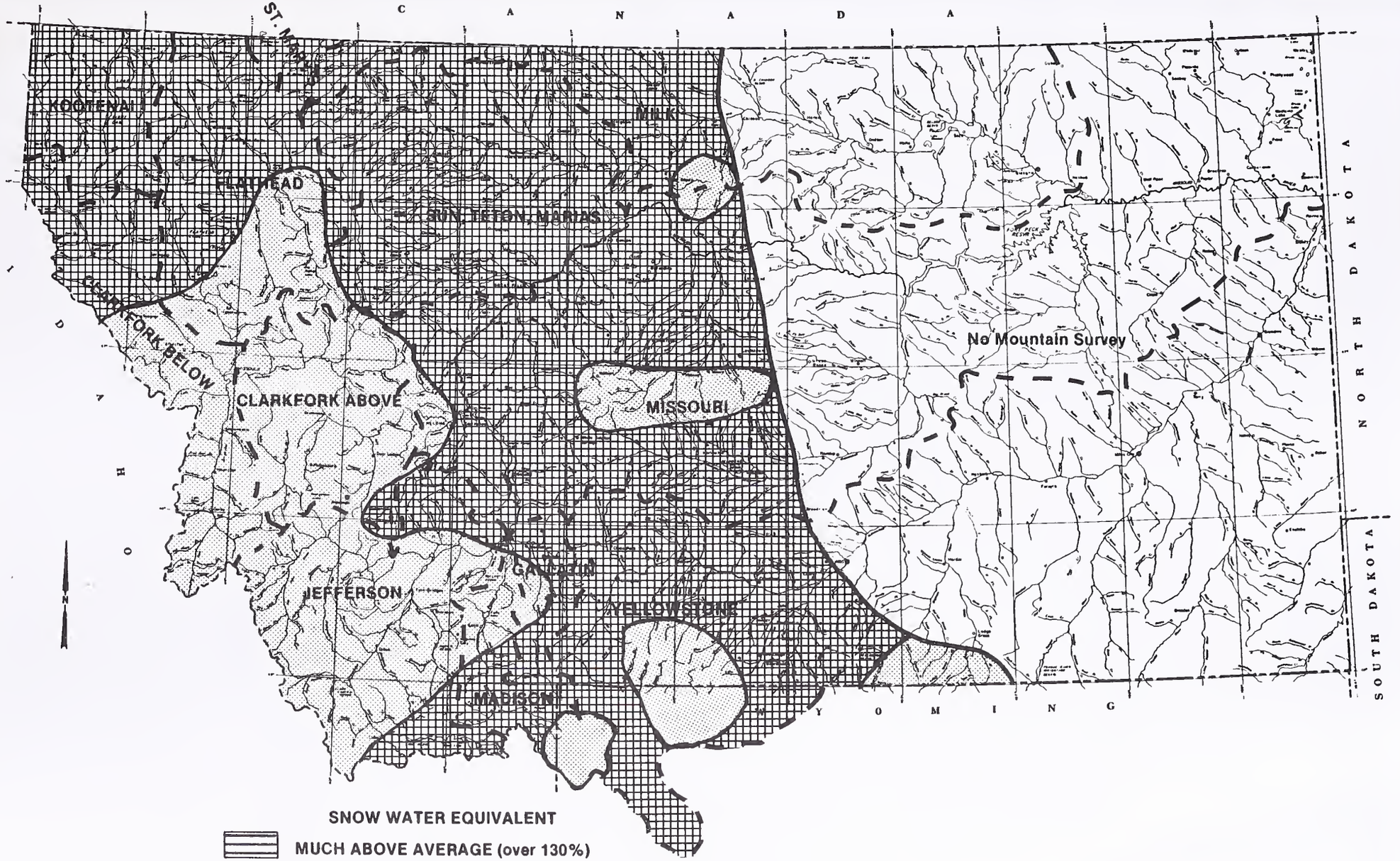
Source: NWS
Great Falls, MT

FEBRUARY 1988

U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

MOUNTAIN SNOWWATER EQUIVALENT FOR MONTANA



SNOW WATER EQUIVALENT

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110-130%)
- NEAR AVERAGE (90-110%)
- BELOW AVERAGE (70-90%)
- MUCH BELOW AVERAGE (below 70%)
- NO MOUNTAIN SURVEY

%1961-85 AVERAGE

MARCH 1, 1988

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296-1

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
- Atmospheric Environment Service
- Water Management Service

British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section

Alberta Environment
- Technical Services Division

Federal

U.S. Department of Agriculture
- Forest Service

U.S. Department of the Army
- Corps of Engineers

U.S. Department of Commerce
- NOAA, National Weather Service
- National Environmental Satellite Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation

U.S. Department of Energy
- Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Confererated Salish & Kootenai Tribes
Flathead Valley Comminity College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports.
Their cooperation is gratefully acknowledged.

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SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
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